Trains

MAY
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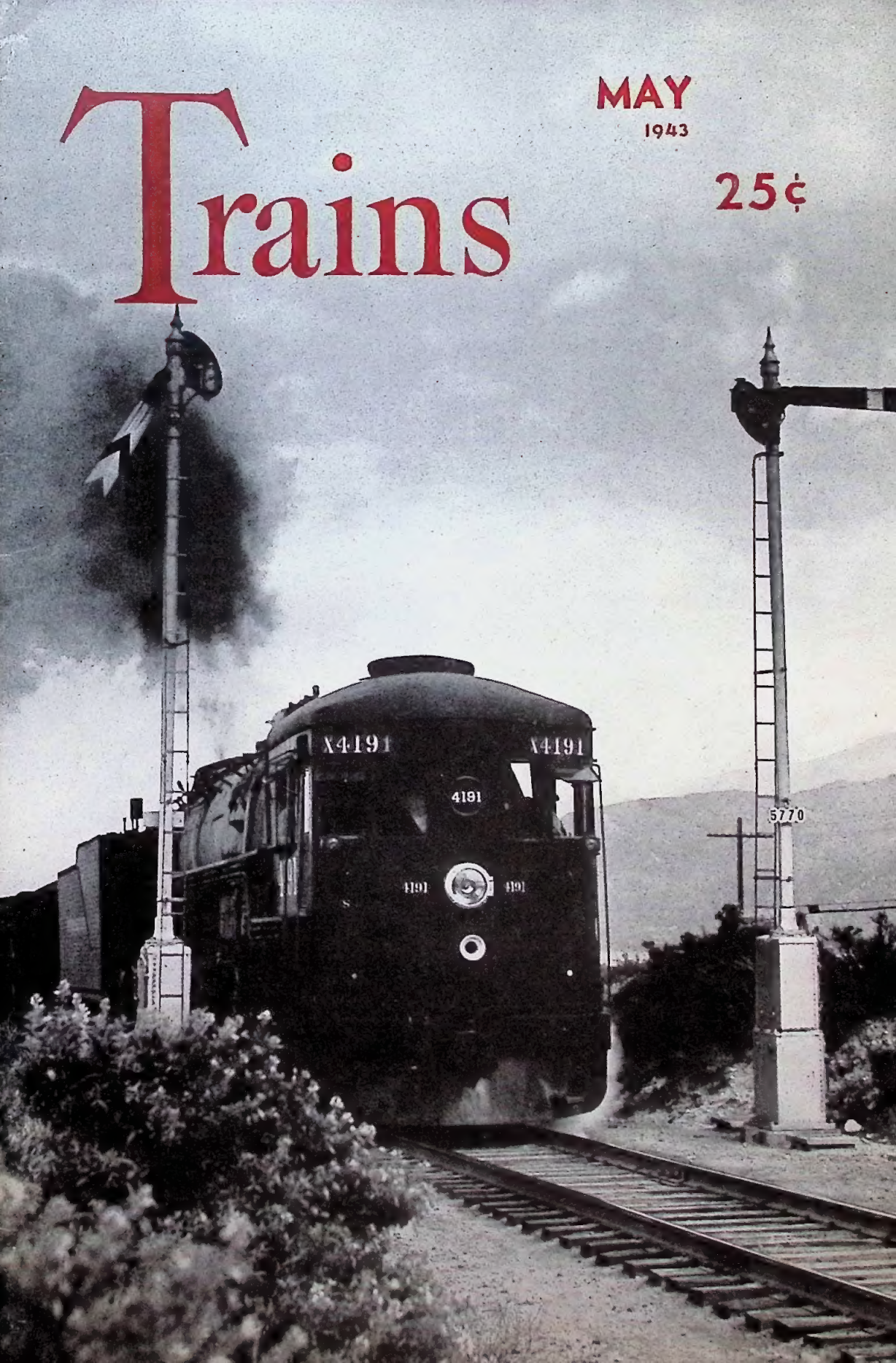

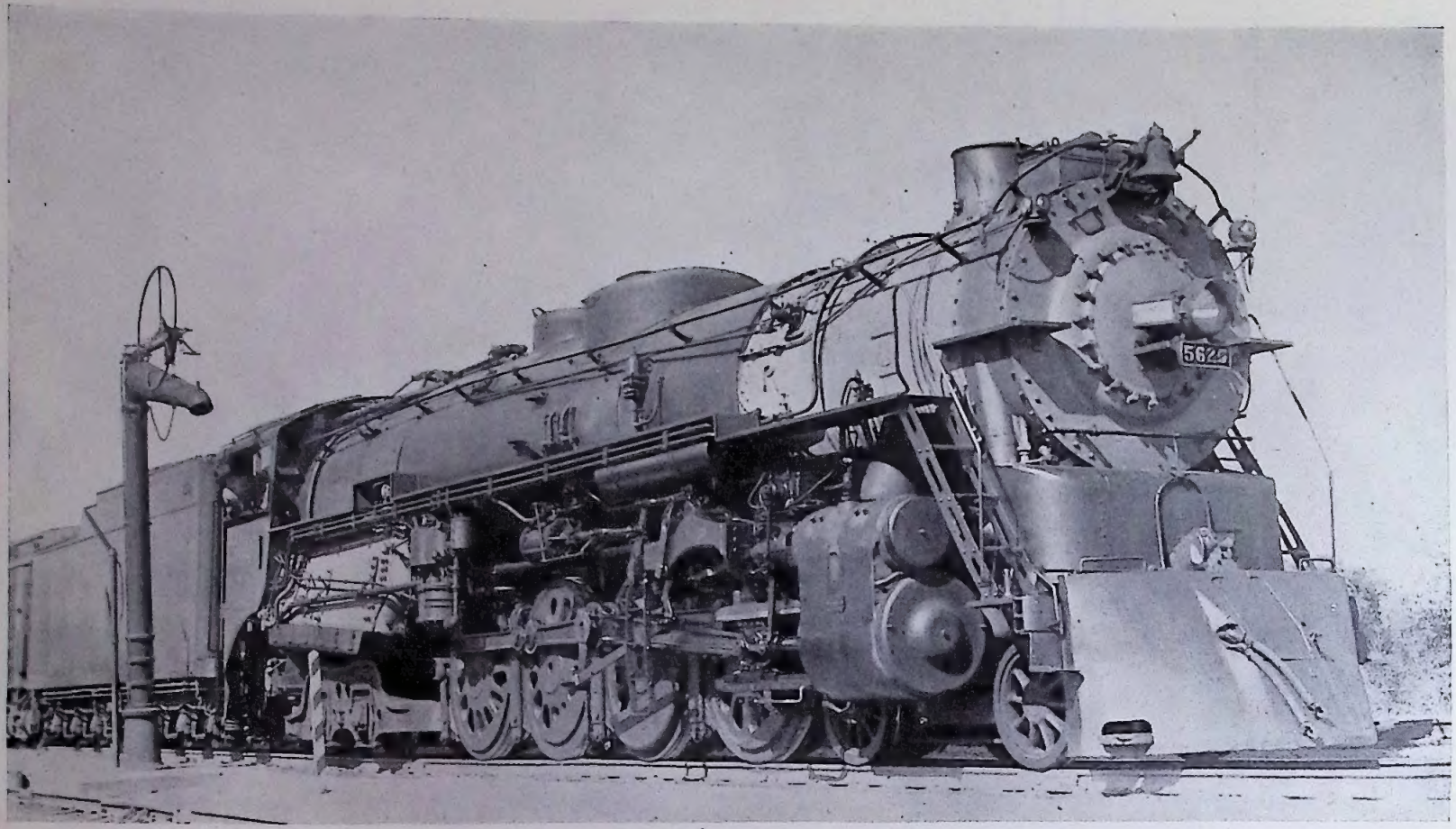

Built by the "Q" at West Burlington.

Under the wide trussed roof of its erecting shop at West Burlington, Ia., the Chicago, Burlington & Quincy has built many a locomotive. Latest were 15 4-8-4's built from 1938 to 1940. The 5625, with its 250-pound boiler pressure, 67,500-pound tractive effort, 28″ x 30″ cylinders, and 74″ drivers, was one of the earlier of these. It is shown here on a passenger train at Red Oak, Ia., on the "Q's" main line 53 miles east of Omaha.

Waybills

Paper for the smaller magazines such as TRAINS is now rationed. We will be able to print barely enough copies for our present net sales. Your newsdealer will find copies hard to get, except for regular customers. If you want every copy, either subscribe direct by mail, or buy at the same news stand every month, reserving your TRAINS in advance. By eliminating the waste of unsold newsstand copies there will be enough magazines to go around.

If you must make a trip these days, it will be more pleasant and comfortable if you remember these common-sense rules:

1. Find *all* rail routes to where you want to go. Then, with the help of an impartial passenger agent, ascertain which of these is the least commonly used. It likely has the most excess capacity at present. You'll find the lesser-known "underdog" road often gives better service, too, because it needs the business more.

2. Ask the passenger agent which days of the week traffic is lightest on this particular route. Usually travel is lightest on Tuesdays and Wednesdays.

3. Ask the agent which trains on this route are least used, and then use one of these or at least give it as an alternative when asking for reservations.

And, of course, make reservations as far in advance as possible and cancel promptly if you change your mind, so someone else may have your reservation.

A. C. K.

Trains

Editors: A. C. Kalmbach, Linn H. Westcott, Willard V. Anderson

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Masthead photo, by H. H. Kingston Jr., Rochester, N. Y., shows NYC No. 9 scooping a drink on the fly at East Palmyra, N. Y.

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Great Northern Electrics

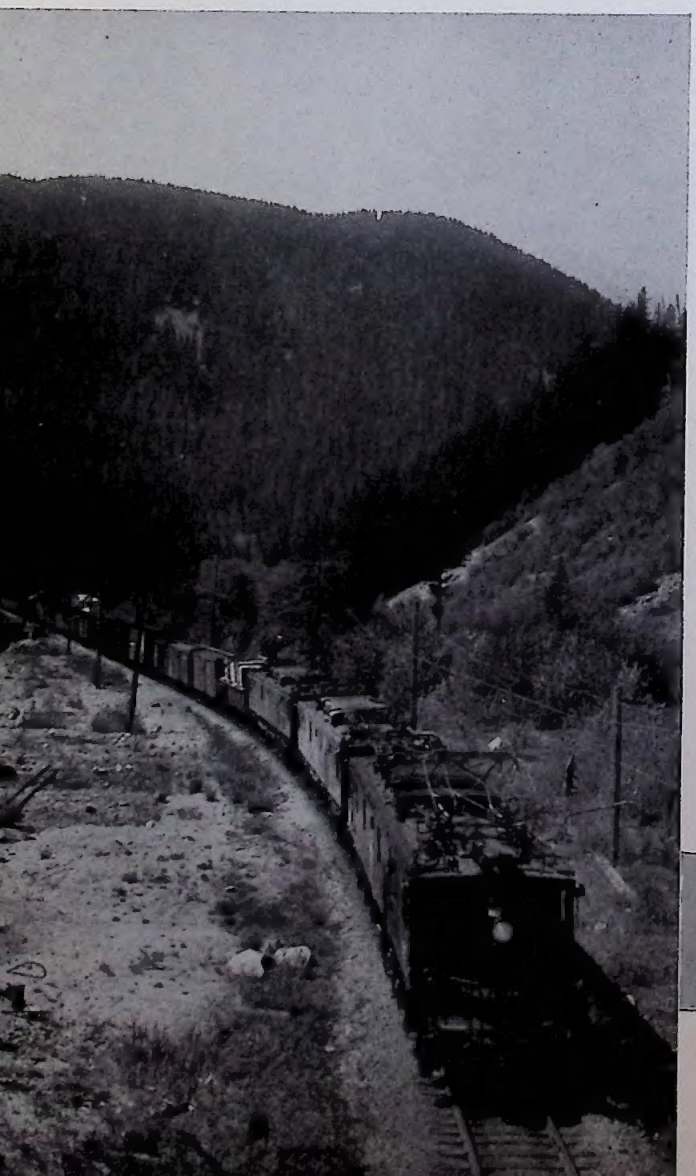
★ 1925 electrification, 1929 Cascade Tunnel effect improvement in economy, speed.

ELECTRIC locomotives of the motor-generator type, operating from 11,000-volt single-phase overhead trolley, handle 5000-ton freight trains with ease over the Cascade Mountains on the Great Northern's main line through Washington. The 72 miles of electrified line includes the 7.8-mile Cascade Tunnel, completed in 1929. The present electrification was installed in 1925 from Skyomish, on the western slope, to the summit, and was extended eastward to Wenatchee at the time the new tunnel was built.

The entire project replaced an earlier tunnel finished in 1900 and an earlier electrification of just the four miles of tunnel, placed in service in 1909 to do away with smoke trouble in the old tunnel. The early electrification was with three-phase current, which, while quite satisfactory at first, did not work well under growing traffic because of low power factor.

Now the modern locomotives of 2-8-2 and 2-6+6-2 wheel arrangement, with motor-generators to convert the alternating current into direct current for the motors, can be used in multiple to pull trains of any desired weight and at speeds consistent with the operating conditions of the line. With steam operation the freight trains averaged only about five miles an hour over the range.

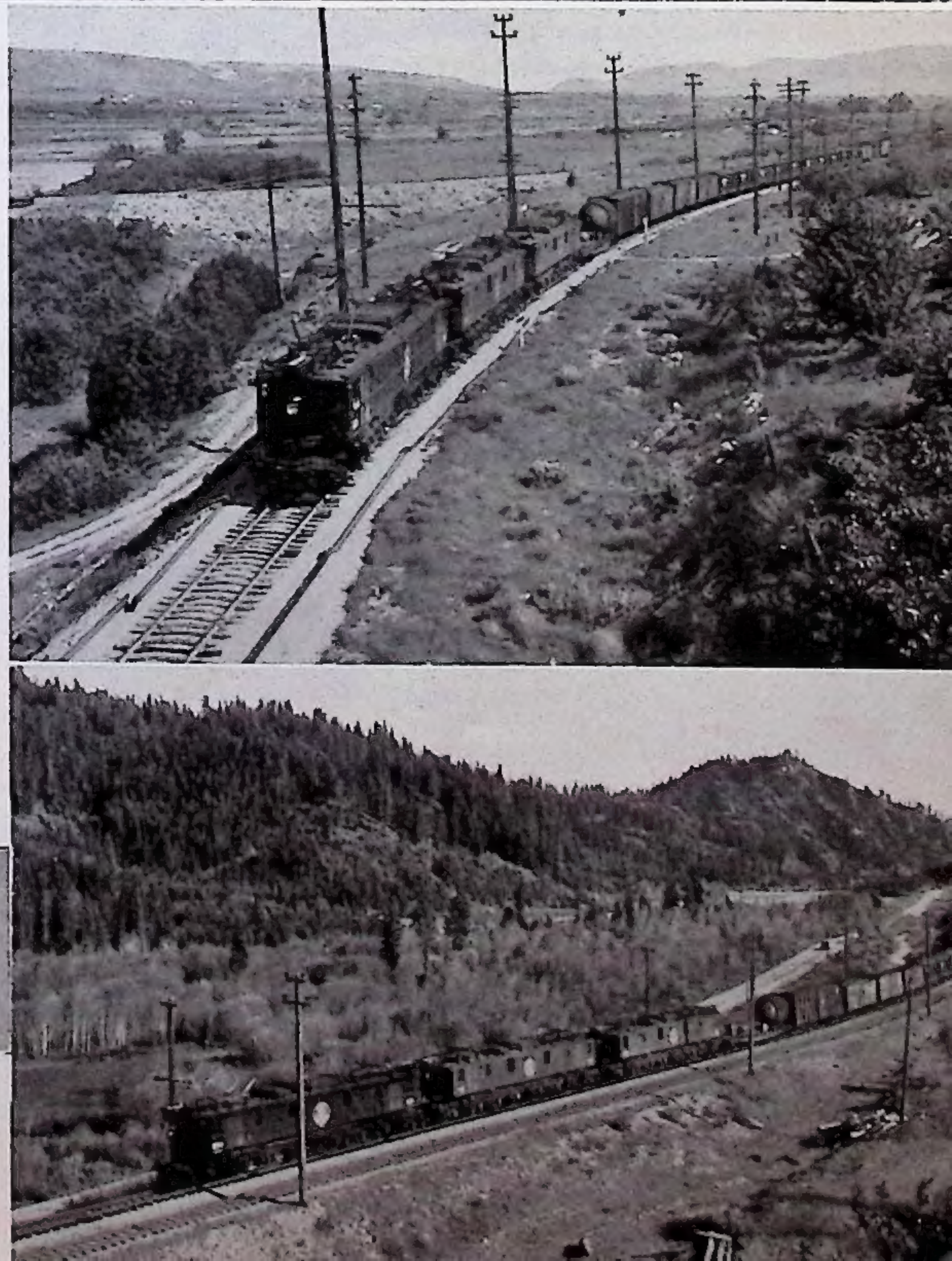
Some of the 2-8-2 locomotives are permanently coupled in pairs, while others are single units. At first these could not be operated in multiple without extra engine crews in each pair or single unit. They were later equipped with multiple-unit control and are now quite regularly used in threes on freight



W. R. McGee, who took these photos, is now in the army doing aerial photography. He was formerly a railroad

trains. For instance, the 5263-ton freight at bottom left has three of the 2-6+6-2's as road engines and a permanently coupled pair as well as a single 2-8-2 coupled as helper into the middle of the train.

The train in the three photos at right is a 5000-ton westbound freight, No. 401, with 97 loaded cars and 27 empties, climbing the eastern slope of the Cascades. Three helper units are cut into the middle of the train for only part of this climb, and in the middle photo the three road locomotives of the 2-6+6-2 type are handling the train alone out of Wenatchee.



brakeman who earned himself a reputation as an outstanding Western railroad photographer.

The Man in the Tower

BY EDWARD HUNGERFORD.

RAILROAD stations interest the Man in the Tower even more than railroad trains and locomotives—and locomotives and trains interest him no end. There is a significance in a great passenger station in an important town that makes real appeal. Long, long ago the Man wrote of them as the gates of the modern city, the portals through which its mighty traffic ebbs and flows each hour of the 24. That was in a day before the automobile had begun to do sad things to Old Man Railroad's passenger traffic. It was in a day when the newest Grand Central and the Pennsylvania stations in New York, along with Burnham's wonderful Union Station in Washington, still were very new, indeed; when the sweeping and majestic curves of the Pennsylvania's magnificent trainsheds still dominated the skylines of Jersey City and Philadelphia and Pittsburgh; when South Station, Boston, and the Union Station, St. Louis, still battled as to which possessed the greatest trainshed in creation; and when it finally was shown that, beyond all dispute, St. Louis had the edge on Boston by just four trainshed tracks, there spread an anguished wail that echoed all the way across the staunch old town from Rowes Wharf to Charles River Square.

There was indeed a something in the vastness and the solemnity of these great trainsheds to excite the full admiration of any man or woman—railroad fan or no—who stepped inside one of them. Of cathedral-like quality it was, like the nave of a mighty church. I easily can remember the first time that I ever entered the great station in 42nd Street, New York. They still called it the Grand Central Depot. Its chief claim to fame was its splendid trainshed, modeled closely after that of the St. Pancras Station of the Midland Railway in London and slightly exceeding it in size.

When, at the beginning of the present century, the flamboyant old station-house which ranged itself along 42nd Street after the fashion of the Paris Tuileries and looked condignly down Park Avenue—that antiquated station-house with a separate, dingy and overcrowded waiting room for each of the three railroads that it originally served (the New Haven, the Harlem, and the New York Central)—was torn away to be supplanted by one, extremely commodious and handsome, the historic trainshed was permitted to stay. The station was then renamed, officially, Grand Central *Station*. But only a brief decade more did the old trainshed remain. Spurred by a frightful accident in the Park Avenue tunnel, it was decided to install exclusive electric operation in the Grand Central and its approaches. This entailed a completely new station—the present Grand Central *Terminal*, and the demolition of the great trainshed, at which more than one New Yorker's heart was heavy. The new terminal, of elaborate design inside and out, housed its many trains without any architectural pretense whatsoever. Its substitute for a train shed was just a vast cellar-like place of two levels (a thousand pillars) and some 67 tracks between them; yet all surprisingly easy to reach from the street, the subways and the taxis.

MOST of the other fine old trainsheds, once so distinguishing a feature of our architecture, now are gone. The opening of the Pennsylvania Station on Manhattan Island (1910) reduced the Jersey City terminal from the road's chief New York City gateway to about a third-rate suburban station; and that train shed which formerly dominated most of New York Harbor represented too high a maintenance expense and was taken down. Fire, believe it or not, destroyed the great trainshed of Broad Street Station, Philadelphia (another borrowing from the St. Pancras masterpiece), and it never was restored. Broad Street Station never again was quite the same. Hence, of the mighty trio upon the Pennsylvania, only the Pittsburgh shed remains, and it begins to look a bit moth-eaten. One of these fine days it will follow its fellows into the limbo of forgotten memories.

When, in other days, you went out upon the main line of the New York Central, there were others of these imposing old sheds, notably at Syracuse, at Rochester, at Buffalo and at Cleveland, with the windup in the very handsome trainshed of LaSalle Street Station, Chicago, which only disappeared during the present decade. All of them seemed to bespeak the majesty of the American railroad in the days when it had no inland competitors worthwhile.

The train shed of the Illinois Central Station on the Chicago lakefront has suffered a considerable decadence, but that of the Baltimore & Ohio in the same city—Chicago's own Grand Central—still is a handsome and well maintained resting place for the iron horse and his wagons. Both of the Boston stations—North and South—lost their great trainsheds some years ago, only to have them replaced by a miserable system of narrow platforms and so-called "umbrella sheds" which offer little or no protection to the traveler. In this, the busy North Station is by far the worst. The station platforms at their entrances are narrowed and congested, and there is practically no shelter against bad weather.

THAT the old widespread trainshed had great disadvantages is not to be denied. Under years of the hot breath of the iron horse, the iron frames corroded and, in one or two instances, fell. A clever substitute for them was the "slotted" shed, invented by Lincoln F. Bush, which first was installed in 1902 in the new waterside passenger terminal of the Lackawanna Railroad at Hoboken, N. J., just across the North River from New York City. This was prior to the electrification of the Lackawanna's suburban lines. So successful was this new type of train shed that it was adopted in other stations then

building or being planned: the Chicago & North Western Station in Chicago, the Michigan Central Station in Detroit, the new Union Station in Baltimore, the new Union Station in Chicago, the remodeled Union Station in Indianapolis; and, with some variations, Kansas City and—much later—Chicago's LaSalle Street Station. Perhaps the happiest use of it was in the Lehigh Valley Terminal in Buffalo, where the supporting pillars, instead of being down the centers of the platforms, where they inevitably are obstructive, stand between the rows of the parallel platform-tracks. Here they are completely out of the way and the platforms are left entirely free for the prompt movement of passengers and their baggage.

The wonder is that this type of highly efficient trainshed has not continued to be used; that most of our passenger stations still have the unsatisfactory umbrella sheds. Like the high-level station platform, so efficient in the quick loading and unloading of passenger trains, the "slotted shed" also seems to be shelved. The Pennsylvania Railroad, always progressive in its engineering vision, has made the high-level platform standard in its newer stations, notably in Newark, N. J. (one of the most efficient stations in all the land), and in Lancaster, Pa.

THE foreign type of station platform, particularly the British, is distinctly different from our own. Except in the very largest terminals there are likely to be, in England at least, but two platforms—one for each direction—and always at the high level of the coach floor. Each of these two platforms in turn is served by two tracks running alongside it; in addition there may possibly be stub-tracks at the far ends of the platforms. These great platforms or docks are each as wide as two or three of our American station platforms, and down their centers run a series of structures: waiting rooms, news stands and refreshment buffets and bars, the last certain of abundant patronage during the longer stops of the trains. Our station platforms in the United States usually are completely devoid of such facilities. It might be advisable in the construction of future stations—and there still are many to be built—to bring some of these things to mind.

Another factor in British stations well worth the consideration of American architects and engineers is the waiting-line of taxicabs right alongside the chief arrival platforms. Generally, it is a level matter of not more than 20 or 30 feet from the train door to the nearest taxi. *Presto*; you and your baggage are in the cab and off and away.

The man who thinks that the average *passenger* has more than the slightest interest in the *architecture* of a station that he is using is considerably off the track. The average passenger's aim is to get into the train, or out of it, just as quickly as possible. Some of our station planners seem to have forgotten this. The hint that one object in station planning has been to thrust railroad patrons past the booths of the concessionnaires I do not believe true. Yet the fact remains that some of the newest and most elaborate of our American terminals—such as at Los Angeles and Cincinnati, for example—are the most difficult for passengers to use, while some of the older ones, such as at Rochester or Indianapolis or Denver or Portland, Ore., still rank as tops for both convenience and attractiveness. What more could anyone wish of a railroad station?

Edward Hungerford

When this huge trainshed (Broad Street, Philadelphia) was destroyed by fire it was not rebuilt, and another city lost a dominant part of its railroad architecture.

Courtesy Pennsylvania Railro

Linn H. Westcott.

Pullmans once glided over these forgotten sleepers.

Now the roadbed is washing away and the ties are crumbling. Much of the Colorado Midland right of way is now used for automobile travel, and the eastern end is still operated as a railroad by the Midland Terminal, which took it over in 1918. This view was taken in South Park, a few miles west of Hartsel. The low ridge in the distance drops down on its far side to the Arkansas River. The Midland crossed this ridge at Trout Creek Pass, then called Bath, a few miles to the right in the distance. Although rail was removed in 1921, spikes are still to be found scattered along the side slopes, or, sometimes, still imbedded in the ties.

Colorado Midland

★ A martyr to the cause of commerce and industry. A weathered monument to a valiant age.

By Linn H. Westcott.

THE Colorado Midland was the most expensive 234-mile main line the West had ever seen when it was completed in 1889. It had what was reputed to be the world's largest Consolidation locomotives. It was the first standard-gauge railroad to pierce the Colorado Rockies. And when it was discontinued only 29 years later, it was the biggest railroad abandonment ever recorded.

The Midland's feet were well embedded in the gravels of Fountain Creek, at Colorado Springs, where the Great Plains meet the wall of the Rampart Range. With its ankles bumping Pikes Peak, the railroad strode westward to the Arkansas River and north to the fabulous mining town of Leadville. From Leadville in only a few miles it climbed the steep slopes at Hagerman Pass to cross the Continental Divide, then dropped more gradually until it followed the Colorado River beyond Glenwood Springs. Although the Midland always dreamed of going farther west, its actual terminus was at Grand Junction, Colo., where the Colorado and the Gunnison Rivers join.

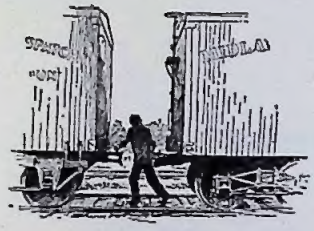
What was the Midland like?

To the old-time boomer, the Midland is a symbol of link-and-pin days, of runaway cars, of washouts and late trains. To the tourist, no more beautiful pictures were ever framed by a coach window than the Yosemite-like scenery of 11-Mile Canyon or the College Peaks as seen from the main line high above Buena Vista. To our generation the Midland is an almost endless, fascinating row of decaying ties balanced atop well weathered embankments, a few wild flowers growing up between them and nurtured by their rot. The men who owned the line, some of whose names were discernible for years on the weathered name boards of stations along the line, perhaps could show you some worthless certificates of common stock which once represented their shares and high hopes in what could have become a transcontinental railroad. If any of these men depended upon the Midland alone to bring their ship to port they were certainly doomed to disappointment, for Colorado Midland dividends were never paid. As we shall soon see, it was a severe competition between the Colorado Midland and the somewhat parallel Denver & Rio Grande which eventually spelled the doom of the gigantic scheme.

But let us get acquainted with the railroad a little more intimately before we tell its story. Although it was a great engineering feat for its day, according to present standards it was a very torturous line. There were grades of as much as four per cent. There were curves of 350-foot radius in great quantity. There were other inconveniences such as the Buena Vista station, which was so high above the town that it was much more convenient for the shippers to do their

Biggest "pulp."

Biggest "pulp" magazine in the world is the monthly *Official Guide of the Railways*, which includes not only the current timetables of all common-carrier railroads of the United States, Porto Rico, Canada, Mexico, and Cuba, and some railroads in Central America, but schedules of steam navigation lines and air lines as well. Containing 1472 pages (February, 1943), the publication sells for $2 a copy or $18 a year. It is published by National Railway Publication Co., 424 W. 33rd Street, New York City.



business at the Denver & Rio Grande's freight house than at the Midland's.

The important stations along the line, from the railroad standpoint, were, in westward order: Colorado Springs, Divide, Buena Vista, Leadville, Basalt, Glenwood Springs, Newcastle, and Grand Junction. The first section, from Colorado Springs to Divide, was one of tough grades and many tunnels. The railroad passed the famous watering place of Manitou Springs and tunneled the northeast flanks of Pikes Peak to climb through beautiful Ute Pass, which, unlike most mountain passes, was a narrow canyon rather than a saddle upon a ridge. Divide Station was important because it was the junction for the Midland Terminal Railroad, which brought in gold ores from the Cripple Creek mines a few miles to the south. Divide was also the summit of the first climb, where the railroad overcame the Rampart Range.

On the way from Divide to Buena Vista, the rails descended Twin Creek to the South Platte River and then wound through the very rocky but beautiful 11-Mile Canyon. After emerging from this gorge they crossed the broad and almost level valley called South Park, an elevated basin which might be described as a sea of grassland dotted with mountainous islands. At the far rim of the valley was Trout Creek Pass, also known as Hilltop and as Bath, from which the railroad gently dropped to Buena Vista.

The line then turned northward, paralleling what is now the D&RGW main line along the Arkansas River, and passed through Granite Gorge (the setting of the anecdote in the box on page 13). Above Granite

William H. Jackson, from the Denver Public Library Western Collection.

West of Hagerman Pass.

The valley of Frying Pan Creek down the west slope of the Continental Divide is typical of the Colorado scenery along the route once followed by the Midland. This William H. Jackson photo from 50 years or so ago shows a one-car local passenger train, headed toward Glenwood Springs, at a mine siding. Had the Midland survived, the track would no doubt be better built and better alined today.

Mainline railroads
Other
Double track
Electrified
Narrow gauge
Mixed gauge
Abandoned railroads
Interurban electric
Cable, Cog, etc.
Separate companies
Trackage rights
Joint use
Projected railroads
Old grades
DENVER over 100 000
Colorado Springs over 25 000
Cripple Creek over 5 000
Howbert under 5 000
GRAND RIVER VALLEY
Colorado
Grand Junction
Delta
Montrose
Gunnison
Salida
Canon City
Pueblo
Colorado Springs
Cripple Creek
Howbert
Colorado Midland
Denver & Rio Grande
Rio Grande Western
Denver & Salt Lake
Colorado & Southern
Chicago, Burlington & Quincy
Chicago, Rock Island & Pacific
Atchison, Topeka & Santa Fe
Missouri Pacific
Chicago, Rock Island & Gulf
Kansas City, Mexico & Orient
Chicago, Milwaukee, St. Paul & Pacific
Chicago & Northwestern
Union Pacific
Chicago, Burlington & Northern
Great Northern
Northern Pacific
Chicago, Rock Island & Pacific
Chicago, Milwaukee, St. Paul & Pacific
Chicago & Northwestern

The Midland Loops, looking east from a point near Hagerman Tunnel.

TRAINS collection, from *The American Railway.*

Gorge the valley widened out, and eventually the town of Leadville could be seen on a hillside to the east.

The Midland then turned practically due west to climb the very steep slopes of Sagnache or Hagerman Pass. The old line, here, went over the top by what were known as the Midland Loops and passed through a wall of rock via 2200-foot Hagerman Tunnel, while the newer line, which branched from the old at a relatively low altitude, climbed through the longer Busk-Ivanhoe Tunnel to rejoin the old main on the western slope. Beyond Hagerman Pass the railroad followed Frying Pan Creek to Basalt, which was a helper-engine point for the eastbound pusher engines. Basalt was also the junction point for the longest branch line of the Midland, 18 miles to Aspen, one of the most important mining towns of the region.

From Basalt to Glenwood Springs was a relatively level run through the broadening valley of the Roaring Fork. From Cardiff, near Glenwood Springs, the railroad built a steep branch to large coal fields at Elk Creek. Partly because the Colorado Midland built a million-dollar hotel there, Glenwood Springs became and is one of the chief resorts along the Colorado River.

From Glenwood to Newcastle the Midland followed the Colorado River on the south side, but from Newcastle to Grand Junction, although it still followed the river, it used joint trackage with the Denver & Rio Grande. At Grand Junction connections were made with the Rio Grande Western Railroad, over which the Midland sent trains to Ogden, Utah.

Except for some four per cent grades above Manitou Springs, first station from the east-

A Midland snowstorm and the rule book.

"SURE, I know they're freezing, but I can't do anything about it," huffed the sleeping-car conductor, drawing himself into a pose of supreme authority. "According to the rules I can't let those coach passengers into my car no matter what happens."

Train Conductor Lyons could see there was no use in arguing the matter any further, and, not being inclined to settle things in a pugnacious manner, he quietly turned back toward the day coach. He hesitated a moment as he stepped onto the platform between the cars, perhaps thinking over the events of the day: Hours before, the two-car Colorado Midland train had bucked snow out of Granite, Colo., and here, only a few miles south, had rammed into a drift it couldn't back out of. And then there was that cursed Baker heater.

In the nineties there was no better car heater than the Baker. General Palmer had one in his private car on the Rio Grande Western, and no less than Jay Gould basked in its comfort in his pet car *Atlanta*. The Baker had steam pipes running down each side of the car to distribute the heat. Colorado Midland had the latest thing. All well and good, but this particular heater on this particular day-coach had to go on the blink just as the locomotive spent its last efforts in a snow drift. For several hours the crew had tried to thaw the heater without success, and then while the handful of day-coach passengers huddled in a corner of the fast-chilling car, Lyons went back to the sleeper to appeal for help.

It might be morning before a snow plow could reach the train, and the prospect of spending the windy sub-zero night in an unheated car was lethal. So with a determined resignation Lyons stepped down into the knee-deep snow and started out for Granite station. He fought his way along the almost-hidden track and waded through increasing snow banks, gingerly crossed the ice-covered bridges which spanned the Denver & Rio Grande and the Arkansas River, and followed the winding right of way into Granite Canyon.

When he arrived at Granite station some hours later he woke the operator only to find that it would be a long time before the snow plow could get out of Leadville. Then the conductor got a bright idea. He fished into his pocket for his money and bought a sleeping-car ticket between Granite and Wild Horse for each of the day-coach passengers. His passengers enjoyed the comforts of the Pullman car for four days on those 15-mile tickets.

ern terminus, the entire main line was within a maximum of three per cent and from Florissant, a few miles west of Divide, to Leadville, and again west of Basalt, the grades were even less severe. Without a doubt, the engineers intentionally located the Colorado Midland with steeper grades in the two critical sections—that is, in the ascent of Ute Pass above Manitou and over the Continental Divide at Hagerman Pass—as a measure of economy. Had the railroad completed its plans as a through connection, these portions undoubtedly would have been relocated with milder grades and much more expensive construction. The student of railway engineering will recognize the economic importance of building a line with short steep sections first, when the future traffic possibilities of the railroad are still uncertain.

Curves were in about the same category as the grades on the Midland, any number of them being as sharp as 350-foot radius in the more critical sections.

For its day the Colorado Midland was an engineering achievement, even though, according to our present standards, it was steep and jerky. Nearly 20 million dollars was spent in carving the rocks, in spanning the chasms and upon the rolling stock and wayside structures of this enterprise.

What did the promoters want for their 20 million dollars?

Gold!

Yes, gold in many forms. There was gold represented by the metal itself in the hills and gulches of Leadville and Aspen. There was gold to be had from the sale of coal from the mountains along the Colorado, still potentially among the richest fields in the country. The transportation of mining machinery and grocery supplies and the miners themselves would bring more gold. The fact that this was the first standard-gauge railroad to pierce the resourceful cattle country west of Leadville was to bring more gold that might otherwise go to the narrow-gauge. But what was in the hearts of the promoters more than anything else was the return they hoped to get from completing a line to Ogden or to Salt Lake City—to make a link in some future transcontinental railroad system.

This venture was made possible only by the events peculiar to Colorado history. It was not until 1859 that Colorado Territory had received much of any attention from the Union. In that year several miners almost simultaneously discovered rich gold mines along Clear Creek, near Denver. People began to flock across the plains in covered wagons, on horseback, and some on foot, taking with them all their possessions, sometimes even their wives. They camped on the banks of Cherry Creek where it joins the South Platte River, and there they built the city called Denver.

In less than 10 years the country began to look like an ant hill. The mining boom brought Denver two railroads from the East, and in 1871 General William J. Palmer started the narrow-gauge era by building the Denver & Rio Grande Railroad south toward Mexico City. Fortunately for the Denver & Rio Grande, the Santa Fe invaded the state from the southeast and deflected the D&RG permanently into the mountains at Pueblo, to a source of revenue vastly superior to any that could have been gained by the route to Mexico. By 1883 narrow-gauge trains were running all the way to Ogden, connecting with the Central Pacific for California.

But industries other than mining were being developed in Colorado, among them lumbering. It was lumber transportation that gave the Colorado Midland its cradle.

In the late seventies, in the valley of Manitou Park, some 20 miles north of Colorado Springs, timber was being cut for mines and building material. The logs were transported to the saw mill by an eight-mile narrow-gauge railroad, but the sawed material had to be carted out on rough wagon roads. It was the idea of the mill manager, H. D. Fisher, to build a standard-gauge railway from Colorado Springs, up Ute Pass to the mill, leaving the narrow-gauge as a branch. His vision did not stop here. It projected on over the Park Range, over the Sawatch Range, through the Uintah Basin and over the Wasatch Mountains to Salt Lake City. Perhaps the dreams went even farther west, but they were never recorded.

It was practical to make the new railroad standard gauge only because the Denver, Texas & Gulf had built a standard-gauge line through Colorado Springs in 1882.

Fisher succeeded in interesting Henry T. Rogers, a railroad-minded Denver lawyer, in the scheme, and soon they had Thomas Wigglesworth making preliminary surveys through Ute Pass. Wigglesworth was an experienced engineer, for he had laid out many a wiggle on the Denver & Rio Grande. In 1883 the men formed a corporation called the Colorado Midland Railway Company. Informally the road was known as "The Pikes Peak Route."

Other men were invited to join the plan. There was Irving Howbert, a banker of Colorado Springs, and J. B. Wheeler and Orlando Metcalf. Wheeler was from Macy's in New York, and both Wheeler and Metcalf were well situated financially. All of these men became directors of the newly incorporated railroad company.

Estimates for the cost of the road as far as Glenwood Springs indicated an expendi-

Pikes Peak viewpoint.

"Pikes Peak Route" was no mere slogan with the Midland. Here at Manitou Park (now Woodland Park) in the shadow of the Peak the road was born as a lumber carrier. This portion of the line is still running as the Midland Terminal Railroad, providing service between Colorado Springs and Cripple Creek. Most of the business is ore, although there is a daily mixed-train round trip.

William H. Jackson, from the Denver Public Library Western Collection.

The Midland in South Park.

Hartsel was a Midland station in the middle of the broad valley called South Park. The easy tangent track through Hartsel was a quiet interlude in the usually

ture of roughly 10 million dollars, so in efforts to raise more capital the influences of J. J. Hagerman, president of the Menominee Mining Company of Milwaukee, were employed. Hagerman had gone to the "Springs" for his health. His efforts to interest New York men were without success, and just as things began to look their worst he contacted some British interests which bought the entire bond issue through the Central Trust Company of New York, bringing the railroad a neat loan of over six million dollars. The railroad was to pay interest on these bonds at six per cent (about $360,000 per year) and to return the principal in 1936. As construction progressed, the cost of the road and equipment soon absorbed all of the loan and all of the eight million dollars of capital from the stock, so other mortgage bonds were issued to come due in five or more years. The original 10-million estimate was scarcely over half the actual cost of the road as completed. For a little over two years the railroad remained only upon paper, but in 1886 construction was started. The engineer was pressed too fast for a final location and as a result the first 50 miles out of Colorado Springs were poorly alined. The railroad paid dearly for this in its later life. A *cheaper* line could have been built which would nevertheless have had better grades and fewer curves and tunnels. This is perhaps one of the reasons why we have no Colorado Midland today, but it is not by any means the most important reason.

The first construction was west from Leadville, but the cost of shipping in materials over the D&RG soon caused the Midland to complete the Colorado Springs-Leadville section in order to establish a better line of supplies. In the first year only four miles of track was completed.

While the Midland was pushing its line westward, the Denver & Rio Grande was eying it suspiciously. The "Rio Grande" had tracks spreading all over the place. Its main line, a crooked narrow-gauge track, ran from Denver south to Pueblo, then through the Royal Gorge to Salida, and across the Continental Divide at Marshall Pass into the Gunnison Basin [see map, page 11]. From

L. C. McClure, 2128 Glenarm Pl., Denver, Colo.

mountainous operation. A short siding, a shorter house track, a pump house, and water tank: that was Hartsel. Today the station is a residence. In the right distance the Midland entered 11-Mile Canyon.

here to the Utah line it was no more direct. All shipments to the outer world had to be transferred from the little narrow-gauge cars to standard-gauge equipment, a laborious process at its best. But the Rio Grande had the territory. It shipped in supplies and already tourists were learning to travel via the Royal Gorge and Curecanti Needle. From its main line long fingers reached into nearly every canyon that bore rich metals. The thumb was the Leadville Branch. The Denver, South Park & Pacific, a three-foot-gauge Union Pacific subsidiary, also ran into the region from Denver across South Park to Buena Vista and Gunnison, with an important but circuitous branch to Leadville.

But here was the Colorado Midland, a newcomer intruding into narrow-gauge territory. Its standard-gauge advantages threatened to absorb traffic wherever it might reach. Since no one is ever sure how long business in a mining region will hold out, a railroad, particularly, must get the business while it's there. If the business in Leadville should last only a few years, and the standard-gauge Colorado Midland were there to get it, much of the Rio Grande's investment would be wasted. Immediately the Denver & Rio Grande started planning a third rail along its main lines so that standard-gauge equipment could reach the mining camps. What was more important, the D&RG began to push the end of one of its branch lines westward from Redcliff, near Leadville. This last move gave the Rio Grande access to the three points the Midland wanted for its very own. They were: Glenwood Springs in the coal mining and cattle region; Aspen, the biggest nonrailroad mining camp in Colorado; and the Colorado River, down which either railroad could connect with the Rio Grande Western for Ogden and points west.

By the time the Midland had completed its line to Glenwood Springs and Aspen, in 1887, the Rio Grande already had narrow-gauge tracks to these points and was following them up rapidly with third rail. Thus the conflict between the standard-gauge and the narrow-gauge roads—one with better facilities, the other with established busi-

U. S. Forest Service, courtesy W. R. McGee.

Wildflower excursion.

All-day excursions to picnic and pick wildflowers were features of the Midland's passenger business around the beginning of the century. No longer do the wildflower pickers pose with their train in 11-Mile Canyon, for the roadbed is now a highway (lower right) with tunnel portals framing the beautiful scenery which the railroad once so proudly advertised on its timetables and tourist circulars.

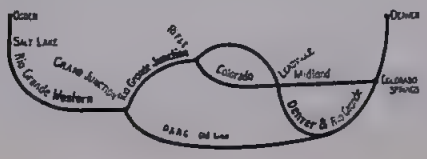
ness connections—was in fact becoming a conflict between two standard-gauge lines, a newcomer and an old hand at the trade.

Both the Rio Grande and the Midland pushed west from Glenwood Springs, the Midland on the south side of the river and the Denver & Rio Grande on the north. By the time the Midland reached Newcastle (1888) the Denver & Rio Grande had beat it to the draw and its line had shot past this point to Rifle. This was very bad for the CM. Although the Midland did push its roadbed (and perhaps track; here records are not clear) on to Rifle, the next year found the two railroads compromising by jointly building the Rio Grande Junction Railroad from Rifle to Grand Junction, the Midland using trackage rights on the Denver & Rio Grande between Newcastle and Rifle. In 1889 the Rio Grande Junction* was completed, and the Colorado Midland reached the westernmost point it was ever to reach: Grand Junction. The standard-gauging of the Denver & Rio Grande and of the Rio Grande Western was completed to Ogden, Utah, so that in a single year two new routes across Colorado were formed. Both were standard-gauge and both hotly competitive.

The struggle between the Rio Grande and the Midland was a tie in this first lap of the race, but the situation was bound to give either one or the other no end of difficulty, and as it turned out, the Midland was the loser.

Although, as I said, the Midland never reached a point west of Grand Junction, its cars were run through to Ogden on the Rio Grande Western. Nevertheless, the Midland wanted to build its own line west, and made the attempt several times, but without success. The most notable endeavor was before

* The various railroads containing the words *Rio Grande* in their titles may seem confusing; here's a clue to their identities. All these lines except Colorado Midland are part of the D&RGW today.



construction had reached Glenwood Springs. The railroad spent $40,000 on surveys which ran through the White River Basin and Strawberry Valley to Salt Lake City. This line would have been called the Utah Midland Railroad if it had been completed. Irving Howbert, who was one of the early financial supporters of the railroad and a banker in Colorado Springs, years later wrote that the Colorado Midland would be here today if the extension had been completed. This failure to complete its own line west from Rifle may then have been the most important reason of all why the Midland did fail.

While the flow of through traffic began to freshen the arteries of the Midland, its directors turned their attention to efficient operation and management. Since the Rio Grande reached every important shipping center on the Midland, the Midland's only recourse was to operate the line as efficiently as possible and to give good service to build up favorable public relationships.

Linn H. Westcott.

Our paper is now rationed.

Paper for the smaller magazines such as TRAINS is now rationed. We will be able to print barely enough copies for our present net sales. Your newsdealer will find copies hard to get, except for regular customers. If you want every copy, either subscribe direct by mail or buy at the same news stand every month, reserving your TRAINS in advance. By eliminating the waste of unsold newsstand copies there will be enough magazines to go around.

Soon sheep were being loaded at Hartsel, machinery was rolled out of cars at the mines, cattle were driven to the loading pens at Basalt, Glenwood Springs, Newcastle and a host of smaller points, and coal trains screeched down the four per cent branch line to Cardiff with fuel not only for the locomotives of the railroad but for many of the towns along its way.

Pushers helped the trains over Hagerman Summit, which, incidentally, was the highest crossing of the Continental Divide by any standard-gauge transcontinental railroad link. Maintenance crews examined the roadbed and tamped in dirt wherever the newly built line had settled. Bridge crews pumped their hand cars from span to span to examine the many steel trestles along the line. Station agents made out bills of lading, switch engines shunted cars, conductors took tickets from the growing crowds of tourists, Consolidations smoked up the tunnels in Ute Pass, brakemen rode the tops of cars and listened to the echoes of rolling wheels against the rock in 11-Mile Canyon. In the company's offices accountants worked over their books of figures and executives executed.

Soon the children along the way could point out each train by name. Westbound there was the *Ute*, Train No. 7, which left Colorado Springs at about 10 p. m. and went all the way to Ogden. There was No. 5, an express, but with added coaches, sleepers and a reclining-chair car. Eastbound there was the *Coyote*, which was really the *Ute* coming back again, while No. 6 was the ex-

press. There were any number of freight trains each day, some of them solid with cattle cars and others with varied assortments of equipment. There were over 1000 cars on the Midland, and four-fifths of them were coal cars. From Colorado Springs to Woodland Park frequent suburban trains served the resorts in Ute Pass in a manner not unlike the interurban of a later day.

Besides the regular trains and the freight trains there were the Thursday Wildflower Excursion specials. Hardly a resident of Colorado in the balmy days missed riding at least one of the wildflower excursions. The wildflower train left the Springs at fairly early morning, ran through Ute Pass as the sun began to light the crags, and was soon trundling down the rocky aisle of Twin Creek to Florissant. Here some passengers would alight and take carriages to the nearby petrified forests, while the rest of the party would stay with the train, as many crowding into the roofless observation car as it could hold.

Up through 11-Mile Canyon the train would wind, blowing its whistle not as a danger signal so much as to amuse the children. Eleven-Mile Canyon was truly, and is, one of the most beautiful canyons in the West. The South Platte River, in seeking a way out of South Park, which it drains, has cut a deep gorge through granite. The great walls of rock towered over the right of way and occasionally the train pierced one of the jutting ramparts by a short tunnel.

On reaching Idlewild or Spinney the train would stop and the families would scramble out with bulging picnic baskets. These same baskets would be returned to the train several hours later no longer filled with pies and cake, fruit and turkey legs, but full to the brim with every variety of wild flower found in the valley. Needless to say, the aroma of that train was as lasting in the memories of the excursionists as their view of the brilliant Western sunset far beyond the mountains.

Near Idlewild, where this train stopped, the old right of way now runs smack-dab into the concrete wall of a huge dam. For several miles the old roadbed is now under water. Across South Park there is an endless row of ties, bending gently to conform to the contour of the land. Although it may be gone now, I saw, three years ago, a good-sized steel bridge without track where the Midland crossed over the Arkansas a few miles north of Buena Vista. Other portions of the line were in equally good condition even though the rail was removed over 20 years ago, and many parts of the old line are now converted to automobile roads. From Divide to Florissant driving is very easy, while from Leadville to Basalt one can see the wonders of Hagerman Pass and Hell Gate by paying a toll to pass through Carleton Tunnel.

This tunnel, known in its railroad days as the Busk-Ivanhoe Tunnel, was the biggest improvement project of the line. Originally the railroad climbed the east side of the Continental Divide by a series of loops forming a *W* with an extra leg added for good measure. At the top of this ladder it passed through the 2200-foot stone wall of Sugar Loaf Mountain in what was known as Hagerman Tunnel. Although the west side was definitely a downgrade, it was in more gentle territory and the engineers had no need to form loops for several miles from the tunnel. This high line over the top was tremendously expensive to operate, particularly in Winter, when the snow would drift down over the various rungs of the ladder of tracks. So some of the directors of the Midland formed a separate company, the Busk Tunnel Company, J. R. Busk, president, to build a new tunnel from Busk, at the bottom of the ladder, to Ivanhoe, a point on the western slope adjacent to the old line. This new tunnel was

R. H. Kindig collection.

44 years ago and today.

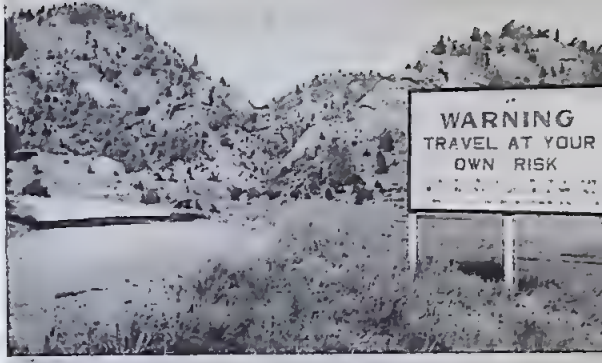
Hagerman Pass was the operating *piece de resistance* of the Midland. As many as eight locomotives were sometimes needed to push one snowplow during the terrible Winter of 1898-99, when the railroad was using the old line with a short tunnel at the summit instead of the newer and lower Busk Tunnel. The state has now taken over the right of

not quite two miles long and went uphill all the way to the western portal. It saved the trains a climb of 581 feet and was completed in 1893 after three years of work. Although it cost just short of a million, it was cheap considering what it saved the Colorado Midland in operating costs. Probably because of difficulties in obtaining capital, the new company rented the tunnel to the Midland at 25 cents per ton and 25 cents per passenger, plus maintenance, instead of selling it outright to the railroad. The tunnel company had only one customer, it's true, but the Midland had to choose between the high cost of operating over the loops and the almost as high rental for using the tunnel. It saved a distance of seven miles and 1958 degrees of curvature.

The Midland main line was also improved at a point near Leadville. Originally the tracks climbed up to the city and then down a four per cent grade to the Arkansas Valley again. It was obvious that a cutoff line should be built along the valley to eliminate the detour. This was finished in 1889, called the Aspen Short Line, and was rented to the Midland for four years, until the railroad bought it outright. Naturally, operation was continued into Leadville on the older route.

Another scenic and engineering feature worth mentioning was the big loop west of Hell Gate. Hell Gate was a point where the railroad passed between two sentinels of rock 1500 feet high and then rounded a cliff where the track itself was 1111 feet above Frying Pan Creek. Two miles farther west, the railroad made a great zigzag to reach the floor of the canyon. Each leg of this huge compressed *S* was three miles long and there were over 3600 degrees of curvature in the nine-mile distance—the equivalent of 10 complete circles!

Naturally the first couple of years brought little profit to the railroad, but by 1890 the line was definitely a going concern—except



way for a highway, except for the Busk-Ivanhoe Tunnel, now Carleton Tunnel, which is privately owned and operated as a toll road. Top view, right, shows approach to beautiful 11-Mile Canyon, where Denver's Idlewild Dam now blocks the road. The Midland formerly dived into the cleft in the distant mountains. Second photo is a typical stretch of abandoned roadbed along Trout Creek, in a valley once also used by the narrow-gauge C&S. Bottom views are at the west portal of Carleton Tunnel, which the motorist is cautioned to enter only by telephone!

Linn H. Westcott.
R. H. Kindig.
Jim Morley.
Jim Morley.

William H. Jackson, from the Denver Public Library Western Collection

College Peaks panorama.

From this high steel bridge near Buena Vista, Midland passengers could see a beautiful panorama of the College Peaks. The viaduct was one of the highest in that section and remained standing for years after the rails were taken up. The photo was taken when the line was new. Notice the striping on locomotive and cars.

for one thing, the payment of interest on the bonds. In fact, the railroad never really did catch up with its fixed charges on funded debt. The Santa Fe nevertheless thought the Midland looked pretty good and bought the railroad in 1890, renaming it the Colorado Midland Railroad Company. This gave the Santa Fe new possibilities of invading the Colorado mountain territory, one of its original intentions.*

But the reign of the Santa Fe was neither mighty nor long-lived. The operation of the Midland was not changed in any way to conform with the Santa Fe system, and when the Santa Fe and the Midland went bankrupt, the Santa Fe in 1893 and the Midland early in the following year (the first series of bonds came due), the two railroads were divorced for all time.

After its entry into receivership, new ore discoveries at Leadville and the careful guidance of George W. Ristine brought several years' prosperity to the road. But a great strike among the Leadville miners in 1896 brought the rosy sky to a quick sunset. The ensuing events led to the auction of the railroad to Henry T. Rogers as agent for the mortgage trustee. The railroad was again named the Colorado Midland Railway Company in 1897.

But the Busk Tunnel bondholders did not like certain aspects of the new setup and refused to let the railroad operate through their tunnel—a sort of above-board blackmail, you might call it. Reluctantly the Midland executives ordered rails reconditioned over the old loops and through Hagerman Tunnel. They had to dynamite nearly all the length of the tunnel, for some two thousand feet of solid ice had filled in during the five years of abandonment. Again the snow plows started working in Winter, and again travel circulars advertised the scenic advantages of the Loop Route.

The Winter of 1899 was a lulu. The Midland got out its only rotary, hooked it on the

* The AT&SF originally invaded Colorado by way of the Royal Gorge. At the same time the Rio Grande was working south toward Mexico City. The two railroads had almost literal battles over their infringements on each other's territory, and by a court order the Santa Fe was not allowed to go westward into Colorado beyond the main line of the Denver & Rio Grande and the Rio Grande was not allowed to go south of the thirty-sixth parallel into New Mexico for 10 years. This explains why the Denver & Rio Grande line to Santa Fe was halted at Espanola, N. M., for a number of years. Espanola is on the thirty-sixth parallel.

front of six engines, and started vacuum cleaning Hagerman Pass. Things went fairly well until one very wintry day the main shaft broke on the rotary. The plow was of course useless and the engines had too much snow behind them to back out. The heroic crew dismantled the shaft, strapped themselves to the top side of some snow shoes, and trundled the heavy piece of steel all the way to Leadville on their shoulders. When it was welded they carried it all the way back up the hill and reassembled the plow. From January 27 through February and March to April 14 the line was completely blocked by snow and ice that year, and the Midland had to route all its traffic over the Rio Grande. This was not to mention the $73,000 spent in futile snow removal. Next year the road ordered another rotary, and relocated 24 miles of track east of Basalt to reduce the curvature.

The tunnel company, in the meantime, felt like putting up a sign, "Tunnel For Rent, Cheap," so a compromise was reached and the tunnel was purchased by the Midland in 1899.

While the big Winter was the last of the railroad's personal difficulties, its worst competitor-troubles were yet to come. In 1900 the Rio Grande Western, already well under the thumb of the D&RG, quietly acquired the control of the Midland jointly with the Colorado & Southern, a Union Pacific subsidiary. This move was probably made to prevent the Midland from building its own line west in competition with both the Rio Grande Western and the Union Pacific. Its control could not affect the actual operation of the Colorado Midland, however, since a state law prevented the consolidation of parallel or competing roads.

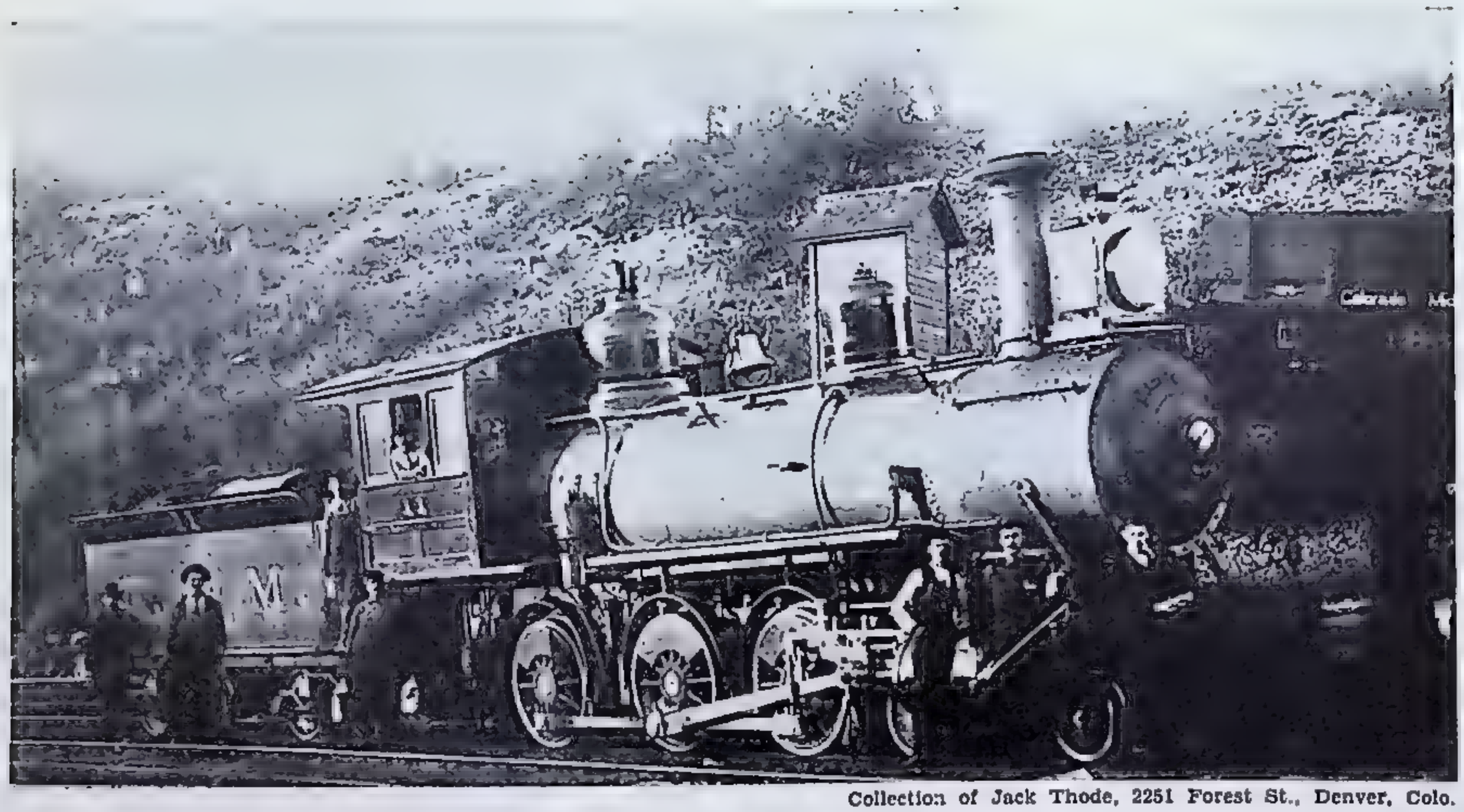
The next year the net grew even tighter, for the Denver & Rio Grande acquired complete control of the Rio Grande Western, and thus the names of the famous Goulds, George Jr., Howard and Edwin, entered the Colorado Midland executive roster. In the meantime, from 1895 till 1905, the Colorado Midland income was in a large part dependent upon the prosperity of Cripple Creek. Much of the rich ore was interchanged from the Midland Terminal Railroad to the CM at Divide. However, in 1907 there was a noticeable reduction in activities at Cripple Creek while the miners were waiting for the completion of a drainage tunnel, and since ore

Hell Gate, then and now.

At Hell Gate, Midland rails were 1000 feet above the canyon bottom. This point is just west of the Continental Divide, where the railroad was still at very near its summit elevation, but the watercourse is already far below. Below is a train on the now-abandoned line; at right, the same location today.

William H. Jackson, from the Denver Public Library Western Collection.

Jim Morley, 2635 Etna St., Berkeley, Calif.



Collection of Jack Thode, 2251 Forest St., Denver, Colo.

shipments constituted much of the Midland's traffic the railroad suffered severely. This started the decline which resulted in the Midland going again into receivership in 1912. In the meantime the Chicago, Burlington & Quincy acquired practically a controlling interest in the Colorado & Southern Railroad, and for a short time put in Daniel Willard, of B&O fame, as the Midland president. The two years after 1910 represented a great depression, especially in Colorado. The Colorado & Southern saw that its interest in the Midland was in danger and the company received permission to sell its interest. In order to protect themselves the Midland bondholders pooled their holdings through the Central Trust Company as depository, and somehow or other the stock representing the Midland's half of the Rio Grande Junction Railway got into the hands of the Denver & Rio Grande, giving the D&RG full possession of the essential link between Rifle and Grand Junction.

When the Midland found out what happened it sued the Denver & Rio Grande but it wasn't until December 13, 1917, that the case was settled. The Denver & Rio Grande then paid the Midland $125,000, but more permanent damage had been done, through the Midland's having gone into receivership back in 1912. The railroad was not sold this time until February 12, 1917, when it was purchased by Albert E. Carleton, a banker of Colorado Springs and Cripple Creek who held interests in other industries of the area including ore smelters at Colorado Springs. The newly organized line was called the Colorado Midland Railroad Company, and officially incorporated on May 31, 1917.

Carleton apparently wanted to save the road and extend it westward as it was always intended that the Midland should be. The plan this time was to have it run directly southwest out of Denver, over the South Platte Branch of the Colorado & Southern (the old Denver, South Park & Pacific) to Bath, thence via the existing Midland line to Grand Junction, then by an interurban right of way already controlled by Carleton to Fruita, a few miles west of Grand Junction. The Carleton group was said to also control the nearby three-foot-gauge Uintah Railroad, which went from Mack, Colo., over the Utah state border, and this, too, was to be part of the new route to Salt Lake City.

Carleton immediately set about to rehabilitate the road, starting with the purchase of rail for the new sections. It would, of course, have been necessary to change both the Colorado & Southern and the Uintah Railroad to standard gauge, which in each case would have been quite expensive. A short section between the interurban line and the Uintah Railroad, however, would not have presented much difficulty. Beyond the Uintah Railroad's terminal, entirely new construction would have been necessary through a region as difficult as that which the Midland had already crossed.

With the entry into war and the rule of the United States Railroad Administration, all these plans had to be set aside, for the government control diverted much of CM's traffic into the parallel routes. As a result

Jack Thode collection.

Early CM locomotives.

No. 9 and No. 11 were representative of the locomotives with which the Colorado Midland started business. Both of them were for freight, although the road also had some Ten-Wheelers for passenger service. Besides the various 4-6-0's and 2-8-0's the only other locomotives ever purchased by the road were 0-6-0 switchers. The No. 11, built by Schenectady in 1887, weighed 125,000 pounds, used steam at 160 pounds pressure, had 19" x 24" cylinders and 52" drivers. The Consolidation was also a Schenectady of 1887, weighed 132,000 pounds, used 160-pound pressure, had 20" x 26" cylinders and 52" drivers. Last locomotives of the Midland were six 182,000-pound Consolidations built by Baldwin in 1907.

the railroad entered receivership again in 1918. It would have been necessary to raise local freight rates 500 per cent to make up for the loss of through freight. Abandonment of operation was ordered by the district judge and in its findings on the case the Colorado Public Utilities Commission commented:

> Colorado Midland, as a whole, does not earn sufficient revenue to meet its legitimate operating expenses, and the Commission therefore finds there is no public demand for the continued operation of said railroad and it should be permitted to withdraw its property from the public service.

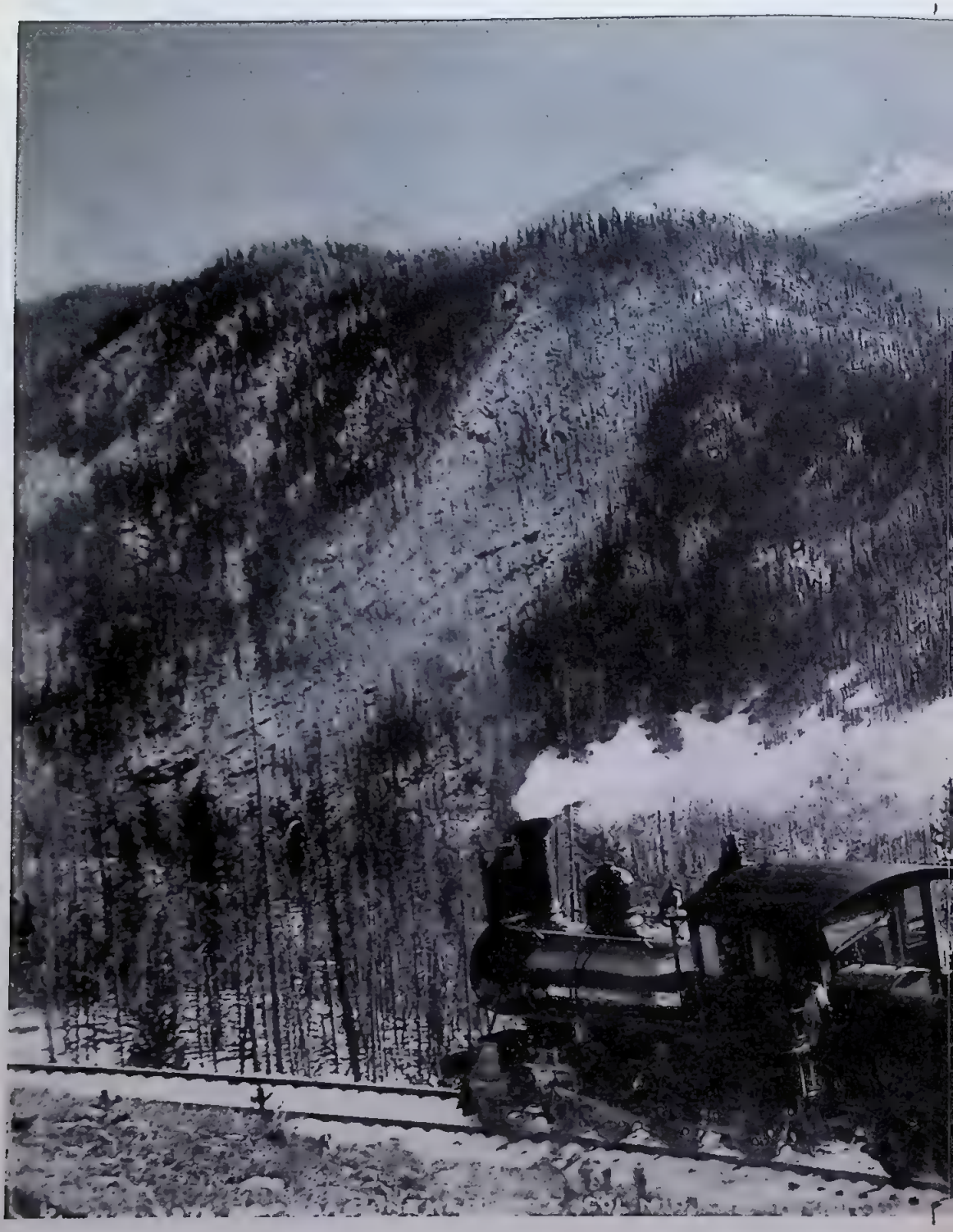
It was decided to dismantle and junk the entire line with the exception of the Colorado Springs and Divide section, which, of course, the Midland Terminal Railroad still needed. It was expected that the rail and other materials would be sent to France for the construction of military roads, but this was never done.

The last train ran on August 4, 1918, but tracks were left untouched until late in 1921. After the war the government was not so sure that the Midland was useless, but the narrower viewpoint of war time had already done its damage.

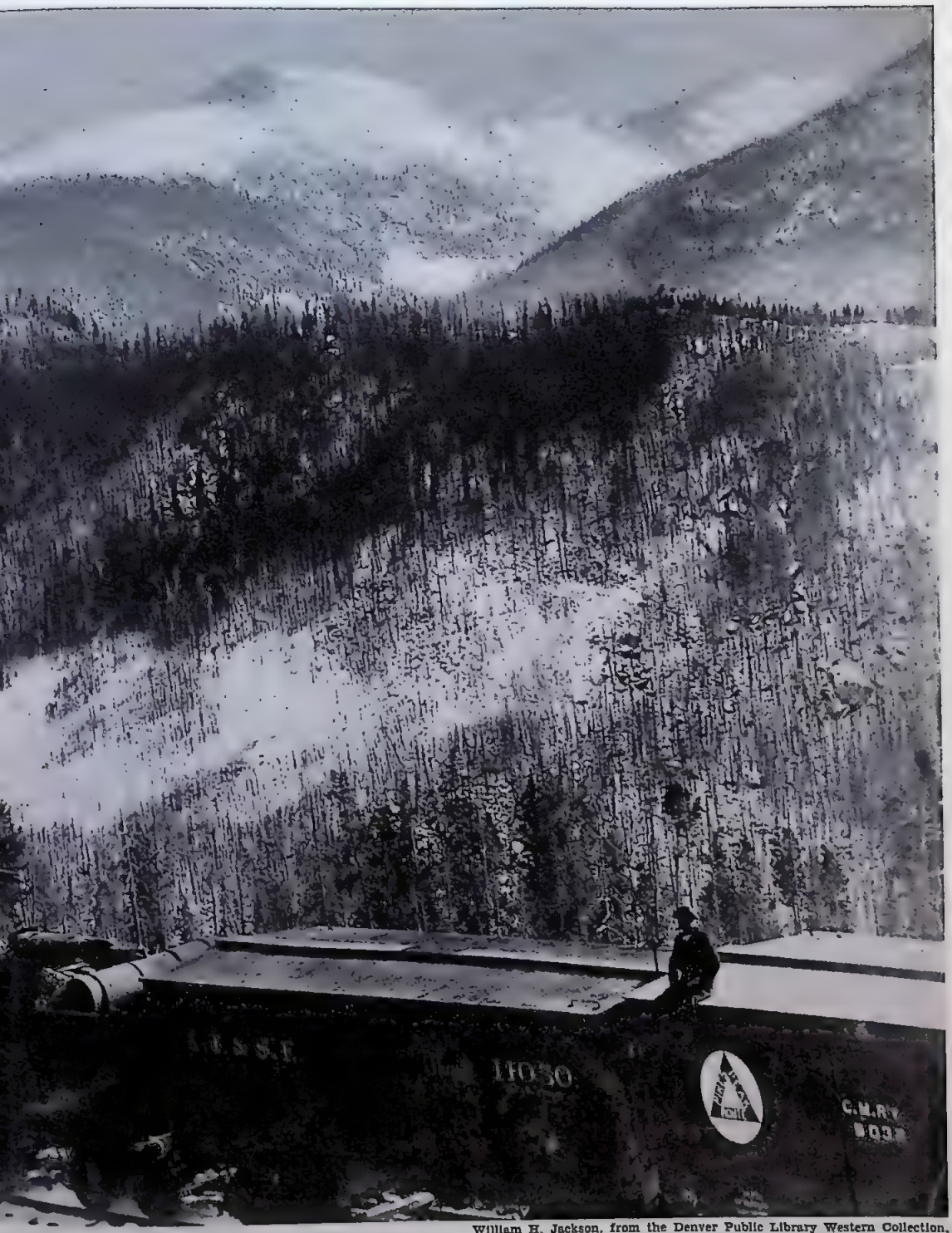
It is quite likely that, had the railroad not already been thrown into the depths of the receivership and the general mining depression earlier in the decade, it might have operated successfully through the war period.

Rumors that the Santa Fe was interested in acquiring the Midland were heard at just about the last minute, but in 1921 the Divide-to-Colorado-Springs section was sold to the Midland Terminal and the 200-odd miles of mainline tracks were torn up for all time. Midland locomotives were spread all over the country; some went to lumber railroads, some to Cuban plantations, while others remained to operate the Midland Terminal. Much of the right of way was turned over to the state for highway purposes. The private rights to the Busk-Ivanhoe (now renamed Carleton) Tunnel were retained and are still earning some money. Carleton had paid $1,425,000 for the railroad and he received enough from its disposal to make a profit on the liquidation.

Sources of Material: Thanks are expressed particularly to Jim Morley and Linwood Moody for helpful material contributions to this article. The Railway Locomotive & Historical Society Bulletin No. 36, *Colorado Midland*, by Carl F. Graves, was especially enlightening about the disposal of the Colorado Midland, and it contains a more detailed history for anyone interested in that phase of the Midland story. Unfortunately, the bulletin is out of print and cannot be obtained from the society. A power roster appeared with a story by Linwood Moody in the August 1936 *Railroad Stories*.



Hell-bent for Hell



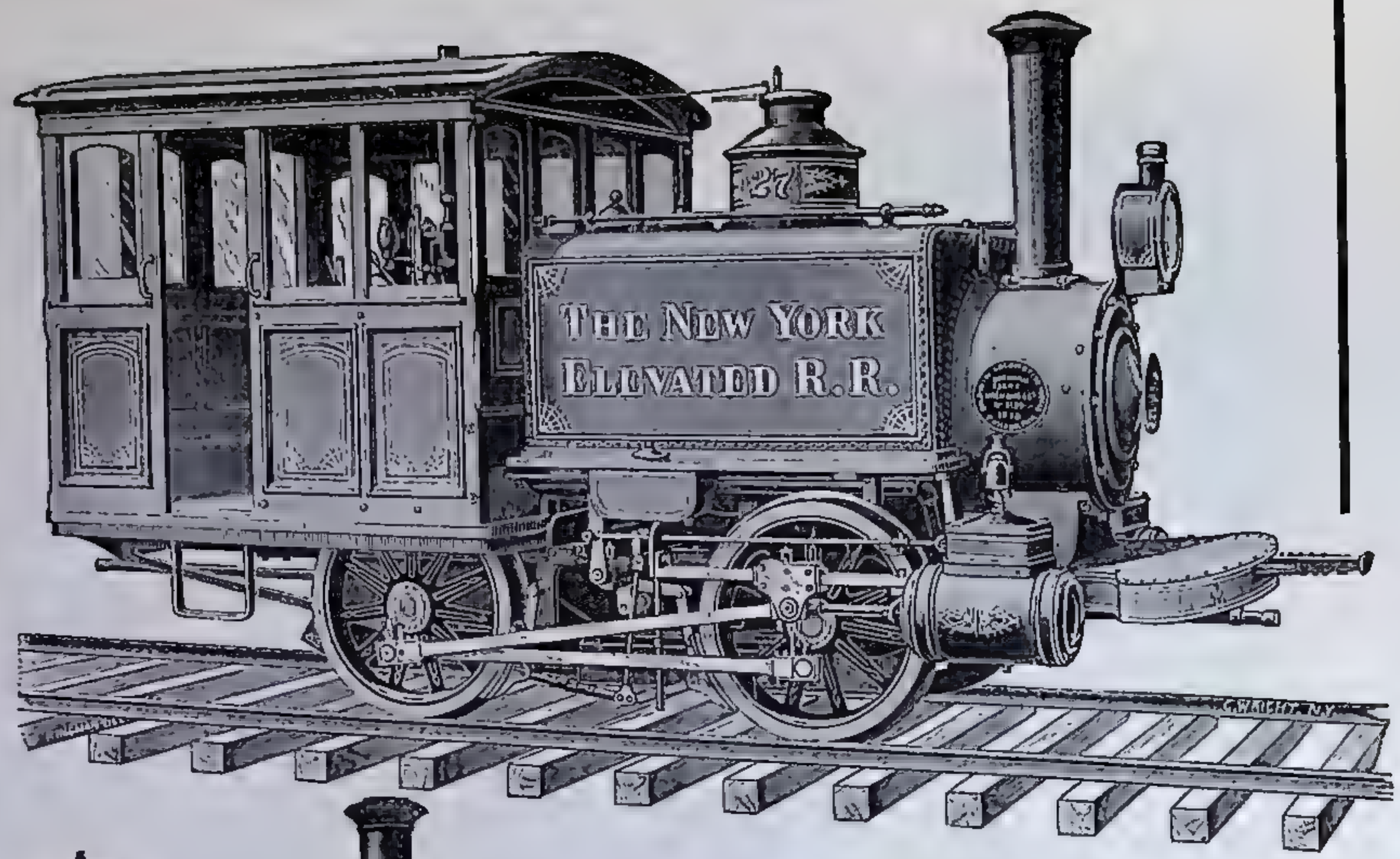
William H. Jackson, from the Denver Public Library Western Collection.

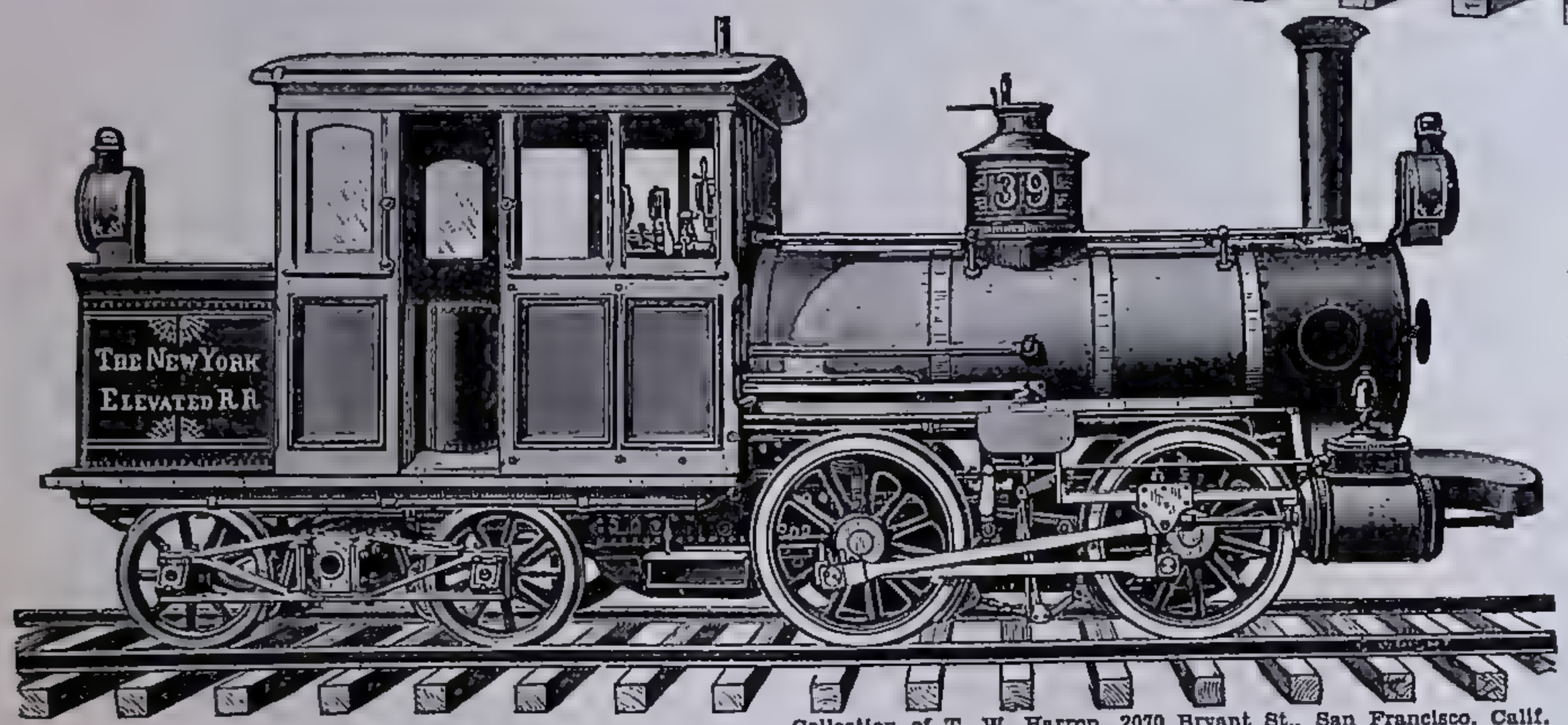
Gate.

This is one of a number of fine pictures taken by William Henry Jackson for the Colorado Midland Railroad back in the nineties. It was taken on the grade west of Hagerman Pass, near Hell Gate. Due to slow films of the time it was next to impossible to photograph trains at speed, so the smoke was added in the darkroom later. Jackson died in 1942 at the age of 99.

Old El Locomotives.

Time was, back in the 1870's, when the elevated railroad, so much disparaged of late, was a shiny new and popular method of rapid transit, even though steam engines were then the motive power. The New York Elevated Railroad Company at first tried four-wheeled locomotives, but on its reorganization and extension in 1879 bought an order of both types shown on this page. A second order was of both types, but by then the eight-wheeled Forney (below) had shown its superiority for el service and future orders were for Forneys alone. They ran around reverse curves of 119-foot radius hundreds of times a day and were eventually to operate exclusively a line with (then) more trains over it than any other in the world. Both locomotives shown are Baldwins, although Rhode Island also built some of the elevated engines.

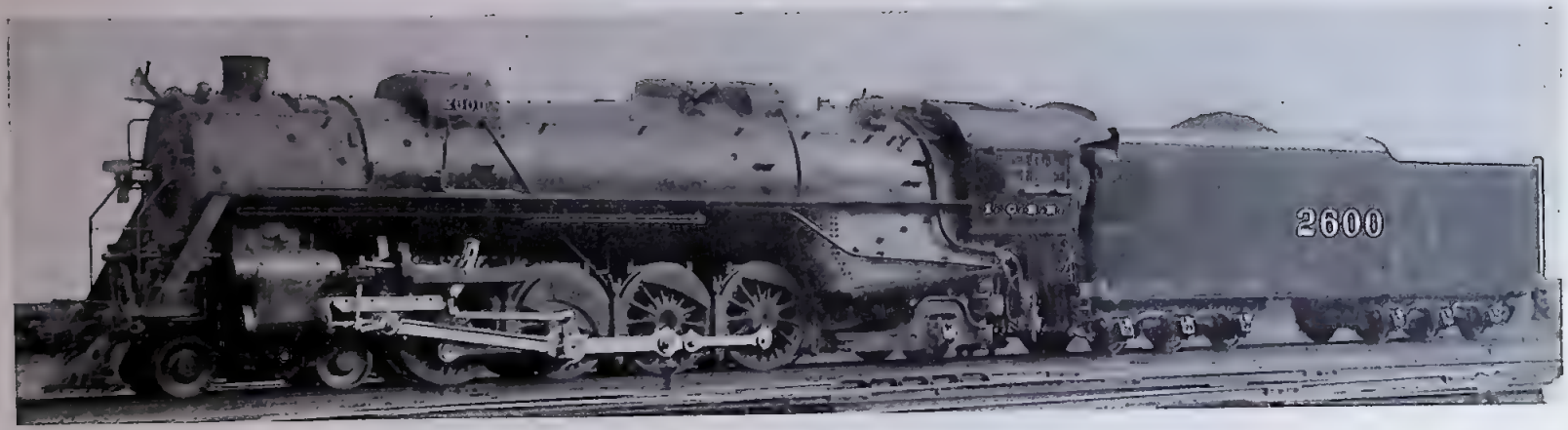




Collection of T. W. Harron, 2070 Bryant St., San Francisco, Calif.

Specifications:

Wheel arrangement	0-4-0	0-4-4
Cylinders, diam., stroke	10" x 14"	10" x 14"
Drive wheel diameter	38"	38"
Driving wheelbase	6'-0"	5'-0"
Weight of engine, loaded	23,740 lbs.	29,890 lbs.
Weight on drivers	23,740 lbs.	19,170 lbs.
Diameter of boiler	34"	34"
No. of 1½" boiler tubes	100	100
Grate area	-----	10.2 sq. ft.
Sq. ft. of heating surface	-----	296.5
Cap. of tank, water	-----	450 gals.



Both photos courtesy Illinois Central System.

New Illinois Central 4-8-2's

The Illinois Central is at present building 20 new Mountain-type locomotives of the 2600 class in its Paducah shops. These are built new from the ground up and should not be confused with the 4-8-2's of the 2500 class which were rebuilt from older 2-10-2 locomotives in 1937. These are the first locomotives to be built completely at Paducah, although some 271 engines have been rebuilt and modernized at these company shops since the IC started its motive-power improvement program in 1926. Just as unusual as the rebuilding of 2-10-2's into 4-8-2's was the conversion of a 2-8-4 into a 4-6-4. The resulting higher-drivered locos, like the new 2600 class, are eminently suited to rolling at sustained speed the Central's fast passenger, fruit, and merchandise trains. Principal specifications:

Cylinders, diameter and stroke	28" x 30"
Tractive force	78,545 lbs.
Drivers, diameter	70"
Weight on drivers	293,880 lbs.
Total weight of engine	423,893 lbs.
Tender capacity	Water, 22,000 gals.; Coal, 24 tons
Steam pressure	275 lbs.
Grate area	88.3 sq. ft.

Herbert Weisberger, 1800 E. 12th St., Brooklyn, N. Y.

Reading passenger train at Elizabeth, N.J.

Westward from Jersey City across New Jersey runs the busy line of the Central Railroad of New Jersey, used also by the Reading and the Baltimore & Ohio. All these roads are affiliated not only by long-standing traffic agreements but by stock ownership, the B&O holding some 40 per cent of Reading stock and the Reading in turn controlling the Central of New Jersey. A busy spot is Elizabeth, N. J., where the suburban trains, Reading trains to Philadelphia, Reading and CNJ trains to cities in the anthracite regions, and B&O through trains to Philadelphia, Baltimore, Washington, and the West keep the four tracks well polished. The train in the photo is pulled by a Reading Pacific with characteristic wide firebox originated by John Wootten, the great onetime general manager of the road. The larger grate area made possible the use of small-size anthracite as fuel.

Worth It in Cold Cash

★ Capable legal and claim departments often save a railroad their cost many times over.

*By Edward Hungerford.**

At the very elbow of the railroad president stands the general counsel. He is shrewd, resourceful, diplomatic. He has quick perception and action, the faith and loyalty of a friend. In many cases he is a personal officer of the president, in the highest sense. If there is a change of administration of the railroad, there is likely to be a change in the office of the general counsel. If B———, who has been guiding the destinies of the T&S, goes to Transcontinental, he is likely to take Y———, his general counsel, along with him. For, except in the case of some exquisitely organized roads like the Pennsylvania, for instance, the general counsel is in every sense personal to the president. He advises him privately, urges him to this step, cautions him from that.

On the other hand, the general attorney is more likely to be the legal officer of the railroad. Like the general counsel, he has an old-fashioned pride in his profession that makes him hesitate at accepting a vice-presidency; he likes the ring of "general attorney" or "general counsel" in his own ears. Railroad history and tradition both go to prove that. He will hardly drop either title for anything less than that of president.

The general attorney, unlike the general counsel, in most cases will make his offices in the railroad's headquarters. He will handle its litigation, and if in half a dozen years he can bring down its verdict costs from $1,250,000 to $750,00 for an average twelvemonth, as one man did, he will be well worth the large salary that he demands and gets. And his salary will be only one of many of the heavy expenses of the legal department. When that functionary asks for money he gets it and without many questions. The operating department, the traffic department, the engineers, may have to give sharp account for their appropriations; the legal end of the railroad is trusted to accomplish accurate results, without detailed accounting. In some cases it might prove embarrassing.

You want to know the value of the shrewd and perceptive legal mind to a big railroad? Here is an actual case that well proves his worth:

A certain transportation company in the East had a legal vice-president who many people supposed was a political heritage to the road, a man for whom it was supposed a berth had been made by the owner of the property, who was something of a politician himself. A quick turning of the wheel of fortune had thrown one political party out of business at the capital, and another in. The man was given a place in the railroad offices, and a little later was made a vice-president. It so happened that the vice-president knew more than supposers might even imagine; but he was a quiet man, and sometimes some of his own clerks wondered why he drew his big salary. After he had been at his desk a dozen years they found the reason.

In gathering up a number of railroad properties to make the parent company—after

* Specially revised for Trains by Mr. Hungerford from his now-out-of-print book, *The Modern Railroad.*

Next month:

"Midwest Water Stop," a watercolor painting by Gil Reid, will be reproduced in full color on the center pages of the June Trains. Bill Moedinger Jr. tells about the "Dream Railroad," the New York, Pittsburgh & Chicago, which was projected to cross Pennsylvania on a practically gradeless, practically curveless right of way. But its rails were never laid, although permission to build was sought from the Interstate Commerce Commission as recently as 1925.

the fashion of modern railroad practice—one of the most important of these old-time units was found to be in woefully shabby physical form. It was a valuable road in the consolidation. The new parent was willing to guarantee an annual rental of 10 per cent on its stock, but as a railroad it fairly shook at the knees. It stood in dire need of reconstruction, and the men who were offering it a high rental made that a provision of the deal. The old road finally agreed to spend 12 million dollars in revising its line and in buying new locomotives, cars, and bridges. With much ado it accomplished its revision, and brought itself up closer to modern standards of railroading.

A decade later, when the governmental supervision of the railroads had come into the full flush of its authority, the quiet vice-president had an armful of state commission reports and vouchers brought to his desk. He locked himself in his room, and in a week he had made from them a 20,000-word abstract in longhand. Then he took his report in to the president of the road.

The acute mind of that general counsel—you see that he was vice-president in this particular case—searching here and there and everywhere, had discovered a mousehole. The old-time road had not fulfilled its part of the contract. It had found that it could revise its lines at a cost of a little less than nine million dollars and had quietly pocketed the change. The big rent-paying consolidation went into the courts, after its cool, impassive way. The case went to a referee and the referee took four years to hear the case and decide it. There were 5000 exhibits offered in evidence and 8000 closely written pages of evidence, making a case nearly equal to that of the receivership of the Metropolitan Street Railway Company of New York City, which fills 20 pudgy volumes of some 800 pages each.

The referee decided in favor of the parent company, and rendered a verdict close to six million dollars, principal and interest. The case was appealed, and sustained. That vice-president had proved his worth. The president of the defendant road came to him.

"We simply can't pay," he pleaded. "We've no reserve fund."

"Then we will take it out of your rental," was the emotionless reply of the quiet vice-president.

That type of man stands forth as a possibility to every one of the dozens and dozens of young men who make the main staff of the railroad's legal department. Those fellows come to the railroad fresh from the law schools. Their salaries are small but their experience and their opportunities are enormous. It is a far better career at the beginning than a briefless existence in one's own office, even with one's own name emblazoned in brilliant gilt letters upon the door. A young man coming into the legal department of a large railroad has a diversity of work offered him. He draws up the simplest of papers at first, acts as assistant to a trial lawyer, then finally comes to the time when he will alone fight the railroad's case in some minor cause in a small court. After that the causes get bigger, the courts more important; he begins to delve into law libraries and to write briefs. Gradually he emerges into a full-fledged lawyer. He may eventually become general attorney or general counsel, and he may find himself welcome to the partnership of some really important law firm. He has knowledge that may be of value in fighting the railroad; whether he will use that knowledge in afterward fighting his erstwhile employer is a matter for his own conscience to determine.

There are special departments under the main heading of the law department. Counsel, the ablest of counsel, is retained at each important point reached by the railroad, and these counsels must act in conjunction and cooperation with headquarters. Special tax counsels have an important office by themselves, for the railroad sometimes finds itself in a difficult position. In its pride it may announce to the world, through the newspapers, that the new Bingtown depot has cost $400,000, but when the Bingtown appraisers come around, possessing in their bosoms no inherent love for the railroad, with those newspaper clippings in their hands, the tax counsel begins to earn his salary.

In these days of federal and state supervision and regulation of railroad management, with now and then an aldermanic chamber or a county board of supervisors trying its hand at the game, there is sure to be special counsel, generally known as the commerce or commission counsel, as-

Courtesy Milwaukee Public Library art-clipping file.

Where? When? How?

Typical of the station-stop photos which adorned the albums of nineteenth-century railroad men are these two unidentified views. The freight crew above posed around its engine much as hundreds of other engine crews posed in the days when the camera was new. But where was the train stopped? The passenger-train picture below was sent as a possible view of Bellevue, Ia., but it isn't the Milwaukee Road station there, spelling or no. The only Belview at present listed in the *Official Guide* under the spelling on the station signboard is Belview, Minn., on the Minneapolis & St. Louis. Is the No. 31, then, an old M&StL engine?

Floating stock.

Railroads operate nearly 2000 tugboats, ferries, car floats, and other units of floating equipment.

signed to the complaints and hearings. For intricate, involved, or unusual cases the road may go outside of its own ranks and hire special counsel—lawyers who are specialists in the very thing involved.

Just as the big and tactful attorney stands back of the railroad's president, so there crouches at his feet the claim agent of the company, who is its watch dog and its scenting hound. Back of this claim agent, who must have achieved a reputation for keen-sightedness and marked ability before receiving his position, is a busy company of claim agents, at headquarters and every division headquarters upon the system. Together, these form a militant organization that stands with the legal department to defend the railroad's treasury against indiscriminate raiding.

Sometimes, because the work dovetails in many ways closely with that of the operating department, these claim agents work under the order of the general manager and the division superintendents. A sly old fellow who headed a big road in the Middle West once explained the reason why—in the case of his property—without even a trace of a smile.

"John says," he was speaking of his own general counsel, "that a claim agent can't be yanked up before any of these touchy bar associations and charged with unprofessional practices if we can show cases—that they're just railroad men and not lawyers, at all."

That was an exaggerated case. As a rule, the young claim-agent has abundant need to be upon his mettle. The public, with an inborn itching against the corporation, keeps him upon that mettle. The man who has had a slight bump upon a railroad train—to make an instance—hunts out the claim office at headquarters. He gets quick treatment and mighty courteous treatment. If he can prove himself in any way entitled to a reimbursement, he gets it—in cash upon the spot. Likewise he signs a release—a most ponderous and impressive document. When his "John Smith" goes upon that document he has, in its own magnificent phrasing, "in consideration of money received," released the railroad company from all obligation to him from the beginning of the world, the fall of man and the decline of the Roman Empire up to the very moment of the signing.

He goes home, pretty well satisfied with himself. It was only a little bump at that. A 25-cent bottle of arnica had made him physically himself once again; and as for his suit, well, that was pretty well worn, anyway, and $3 to a tailor would make it a good "second best" for next Winter. He feels that the $10 that the railroad gave him was pretty abundant compensation.

But wait until he sees his neighbor. The neighbor almost froths at the mouth when he hears of the transaction—of the impressively worded release that was signed.

"You're a chump," he says. "You could have gone to bed, stayed there a week and they would have given you a hundred."

After which the man looks upon his $10 with contempt and a feeling of injury, and becomes a corporation hater. Or perhaps he was really hurt and had some sort of a bill from his doctor and his druggist, and lost time to be compensated for at his job. The railroad has figured these together and paid him the sum, with the signing of the release as a necessary feature of the transaction. The thing was not very serious, we will say in this instance also, and the hundred dollars that he received was really a fair compensation. Now watch the neighbor, who, it happens, is a pretty shrewd attorney:

"Let me take the case, even now," he urges slyly. "I'll get a verdict of five thousand for you, if you are wise, and we will divide the proceeds."

"But I've signed their release," groans the other. The shyster laughs in his face.

"You were drugged," he whispers, "drugged, and we will prove it."

That is not an exaggerated case. It is the sort of thing that the railroad's claim-agents are combating every day of the year. Wonder not that some of them finally lose the fine sense of honor themselves!

And beyond this class of folk is another, nothing less than criminal. There are men and women in this broad land who make a business of feigning injury, and make it a

pretty astute business, too, so that they may dig deep into the strong-boxes of the railroad. The most dramatic of this particular brand of "nature fakirs" was Edward Pape, the man with the broken neck. Pape had a most remarkable deformity and was not slow to avail himself of it as a money-making device far beyond the figures that might have been quoted for him by circus sideshows or dime museums. Pape made a specialty of the trolley companies. He could so alight from a car, coming slowly to a stop, that he would fall and go rolling into the gutter. Instantly there was excitement and a group of men to pick up the prostrate form. He was found to be badly injured and hurried to a hospital. There the interne discovered that he had a broken neck. A

Motive-power parade.

Along the Harlem River north of Manhattan on the New York Central one can find almost any type of locomotive power, as these photos show. A steam locomotive on this electrified track is not the usual thing, but one does occasionally happen by. A heavy electric locomotive with through passenger train is more to be expected, and multiple-unit electric suburban trains are frequent. The three-power locomotive at lower right is really the payoff, however. It is running here from third rail, but it can also run on power generated by its oil engines or on power stored in its storage batteries.

William Baumgarten, 100 Seaman Ave., New York City.

Extra! Last of Midland?

Is history repeating itself? The Midland Terminal, operating the only remaining track of the Colorado Midland, applied April 14 to abandon regularly scheduled service, since by the government order to close gold-mining operations the road's principal source of income is cut off. Compare this with the CM's last stand, page 24.

marvelous set of x-ray photographs was made, and the railroad was usually willing to settle a large cash sum rather than stand suit. Within a week he was probably away practicing his trick on some other unsuspecting railroad.

"There was a time over in Philadelphia that was hell," Pape once told the writer. "I'd just finished my fancy fall, and they got me into the sickhouse and rigged out most to kill. They put hip boots on me there in bed, with their soles fastened to the footboard and a rubber bandage under my chin and over my head. They put 75 pounds in weights on a cord and a pulley-jigger to that bandage and it nearly killed me all day long. At night I used to wait until it was dark and then I'd haul up the weights and put them under the blanket with me. Otherwise, I don't know how I'd 'a' got my night's sleep."

Sometimes the claim agents, working in conjunction with the railroad's secret service, have used the camera to great advantage. A farmer who lives in New Jersey drove into a seaboard city with a load of produce. At a grade crossing, a switch engine overturned his craft, about as gently as such an accident could be accomplished. The farmer was lucky in that he was bruised, rather than seriously hurt. Then he saw a lawyer and learned that he was incapacitated for life by severe internal injuries. He entered suit for $25,000 against the railroad.

There was a case for the secret-service bureau of the railroad, and it took little time to find the right detectives, husky enough to get out into the fields and work for four long weeks as farm hands. When the Jersey farmer began haying that August, he found less trouble than he had ever experienced in hiring low-priced help. He was able to get two big lads who were hard workers.

It was a big hay year and the farmer was not averse to turning in to do his part of the work. He liked to be with the boys he had hired and one of them had a camera that he could take "great" pictures with. He showed him some of the pictures that he took those August days on the Jersey farm. The farmer liked them immensely.

He liked them rather less when his attorney came down from the city one day, with prints of the same pictures that had been sent him by the law department of the railroad. The farmer was given a chance to withdraw from the limelight or else stand a criminal trial for perjury, with the penitentiary's gray walls looming up behind. He took the chance. Few of the dishonest claimants will proceed after such evidence has been put before them. As for the railroad, it usually works better through getting signed confessions of guilt than by going through the more intense workings of a criminal trial.

The secret service stands just back of the claim agents. It has greater or less recognition in the case of different railroads, but its work is generally much the same. It is police. Sometimes it is organized like the police department of a small city, with captains and inspectors at various division headquarters, and at other times its very existence is denied by the railroad heads. But its work is much the same. Its men, generally chosen for fitness from city police or detective staffs, sometimes root out tramps or small thieves along the line and in the freight yards, sometimes in gay uniform patrol the platforms of crowded passenger terminals, sometimes work with greatest secrecy in "plain clothes"—which in this case may be jeans or overalls—to detect theft or treason among employees, and sometimes they receive their greatest laurels in connection with the "fake" suits that are brought against the railroad.

The secret service works night and day. Its members, with the claim agents, are at the scene of a serious accident as quickly as the wrecking train itself. Together with the railroad's own corps of surgeons, retained in every important town, and chosen for absolute honesty and integrity, they form an important adjunct of the personal-injury claim service.

All photographs, Linn H. Westcot

Chicago Subway

★ After 39 years of planning, Windy City approaches goal of underground transit.

EVER since the Broadway subway opened in New York some 39 years ago, one of Chicago's municipal ambitions has been to have a subway. Plans have been drawn and redrawn, bond issues floated, traction funds set up, but until 1938, when the P. W. A. became interested, no holes were dug. But now Chicago has its subway. Regular service has not yet started, for the tube is only partly complete. However, the inaugural trips over a portion of the line were run with much fanfare on April 2. This was four days before the election at which Mayor Kelly sought and got re-election with the subway as one of his triumphs.

The nearly finished line is part of a comprehensive plan, but for the present will connect with elevated lines so that it will in effect be a downtown shortcut and terminal for the el. It consists of two double-track subways, the State Street and Dearborn lines, these being the streets under which the two lines run through the Loop, Chicago's central shopping and business district.

The State Street route runs north of the Loop some three miles to an incline up which it emerges to connect with the four-track North Side elevated near Armitage station. South of the Loop it runs about a mile and a half to 16th Street, where it similarly inclines up to connect with the South Side el. The Dearborn line at present terminates with an underground loop downtown and will run out about three miles to the northwest and connect with the el division which fans out to Humboldt Park and Logan Square. The Chicago Rapid Transit (el lines) will operate the subway in connection with its

Signal and double crossover in Chicago subway.

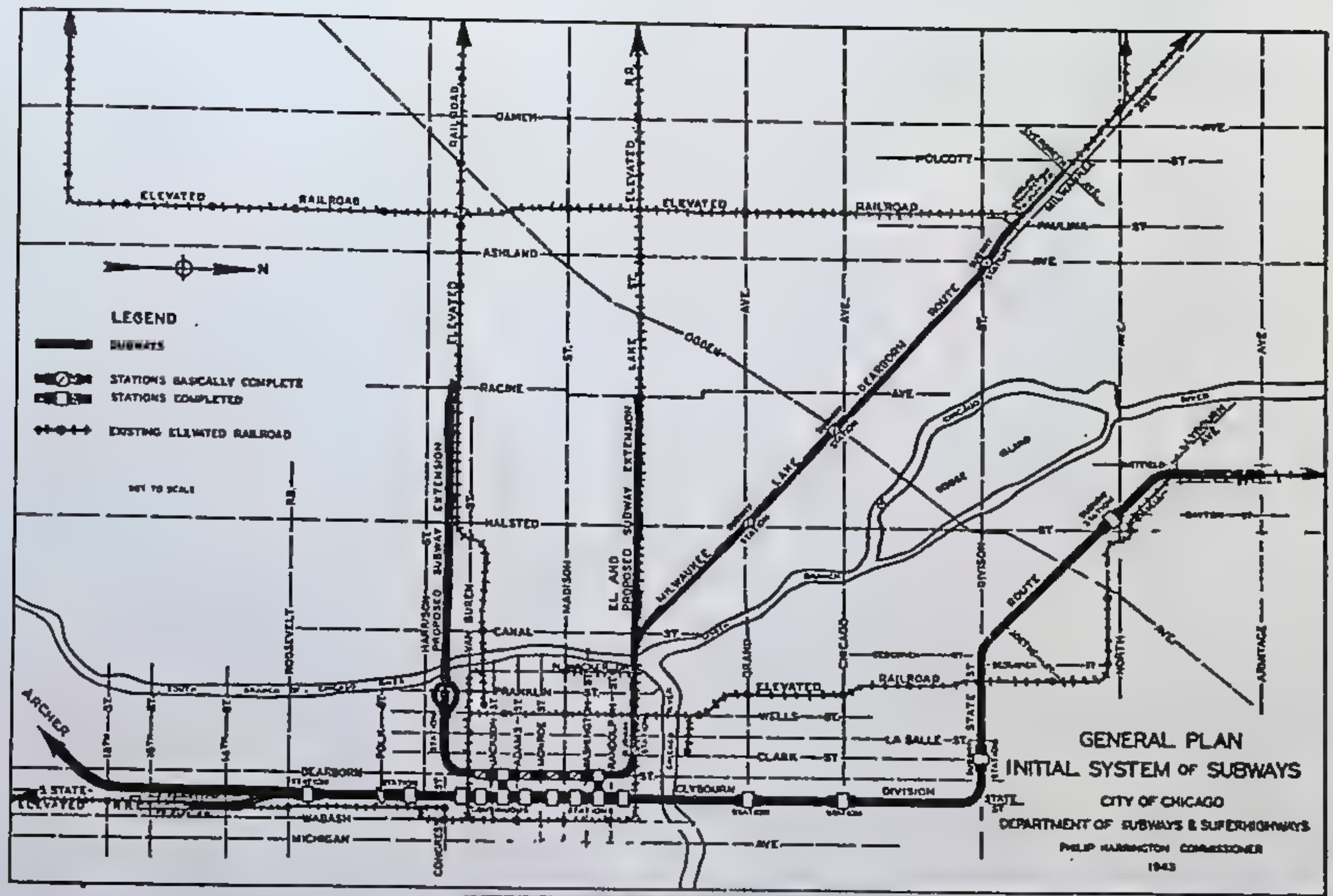
The Chicago subway is roomy enough so that the standard three-color light signals are mounted on posts rather than hung from the wall. At intervals double crossovers connect the two single-track tubes.

existing lines, using trains of its newer steel cars.

Chicago is built on soft, marshy ground, and the subway is tunneled through the firm blue clay which lies some 40 feet below street level. For most of the mileage each single track is in its own tube with arched ceiling, unlike the rectangular multiple-track caverns, with steel girders supporting the roof, found in the cut-and-cover subways of New York and Philadelphia. At stations the tube opens out and in between stations occasional double crossover connections are provided between tracks.

The lines are signaled for 40 trains per hour on each track. To accomplish this close headway, signals are quite closely spaced, and additional signals are used in stations midway of the station platform so that a train clears the approaching block as it starts to leave the station and thus allows a following train to pull up immediately. To the usual red, yellow, and green aspects of the signals a new one has been added, flashing yellow. Not only does the signaling system provide for the usual spacing of trains according to block distances, but curves and other reduce-speed portions of the route are protected by time-limit signals which stop a train if it has covered the approach block too fast. Automatic train stops are located to the left of the running rails, and levers on the signals at cab height allow the motorman of a stopped train to forestall the automatic stop if necessary.

Track is laid with 100-pound running rail and power rail of 144-pound section. This large third rail gives more current-conducting capacity at less cost than copper feeder.



The subway stations are decorated in turn with blue, red, green, and brown to make them more recognizable. The tubes are so far below street level that all stations have mezzanine floors and 38 escalators will be used. Under the Loop is one continuous eight-block-long station in which trains will make three stops.

The map.

The Chicago subway system as planned is shown in the map, along with the present elevated railroad lines. The inaugural trips were on the State Street route between the Loop (Jackson Street) and the North Side junction with the el at Armitage Avenue. The South Side connection at 16th Street is started (upper right photo), and when this is done and finishing work completed on some stations the State Street route will be ready for service. The Dearborn line from loop through downtown and northwest to el connection at Paulina Street is well along. Other proposed extensions are still proposed. Photo at left is typical of the Chicago elevated of today. At right is a station crowd on the inaugural run.

"War Babies"

★ Denied new locomotives by War Production Board, railroads turn to rebuilding some of their older power.

By Lawrence W. Sagle.

FACED with the stupendous task of handling more traffic than ever before in their history, with 500,000 fewer cars and 9500 fewer locomotives than they possessed during World War I, railroads in 1942 needed more motive power. But they could not obtain it through ordinary channels. Tanks, ships and guns necessarily came first. The War Production Board slashed deliveries on locomotives. The Baltimore & Ohio Railroad, which had 23 new Diesel freight locomotives on order, received only nine.

Yet the railroads continue to haul ever-increasing tonnage over ever-increasing mileage, in longer trains of capacity-loaded cars. In 1921, each serviceable freight car traveled an average of 25.8 miles per day. This was increased to 43.7 miles per day in 1941. The average freight train in 1921 consisted of 37.4 cars, carrying 651 tons of freight, while in 1941 the average number of cars per train had increased to 50.3, and the average tonnage to 915. The average freight-train speed in 1921 (including all stops) was 11.5 miles per hour. This was increased to 16.5 miles per hour in 1941.

Modernization of older power was the answer to these increased demands.

On the Chicago Division of the Baltimore & Ohio, heavy steam locomotives of the 2-8-2, or Mikado, type were used for handling all important freight trains. Increasing the coal and water capacity of the tenders made it possible to operate from New Castle, Pa., to Chicago in less time because of the elimination of intermediate coal and water stops between division points.

But this alone did not solve the problem. These locomotives, built from 1920 to 1923, have 64-inch driving wheels. Added speed and increased tonnage ratings resulted in increased maintenance costs.

To cut costs, one of these locomotives, built in 1923, was modernized by reboring the cylinders to 26½" x 32" instead of 26" x 32", increasing the boiler pressure from 220 to 240 pounds, and by substituting 70-inch in place of 64-inch drivers, which, with improved counterbalancing, increased the efficiency of the engine and raised the tractive effort from 63,200 to 65,500 pounds. Oil lubrication was provided for all driving journals, and a lateral cushioning device was applied to the rear driving wheels to enable the engine to negotiate curves more easily. With larger tender and auxiliary tank, this engine was subjected to exhaustive tests with the dynamometer car, and the results were very satisfactory. In consideration of the increased speed, efficiency, and lower maintenance costs, it was decided to change other locomotives.

Three more locomotives were chosen for rebuilding, but of an older type built from 1911 to 1913. They were awaiting shop for Class 1 repairs, and required new driving wheels, frames, cylinders, and, in some cases, new fire boxes. In the case of these locomotives, the cost of modernization was less than in the first case, as they were already due for extensive overhauling.

These four locomotives have justified the extra expense of modernizing them and are doing a splendid job on the Chicago Division.

So the B&O is now launched on a program of rebuilding 20 steam locomotives. These were selected from the Q-1aa class, built from 1911 to 1913, all of which were due for extensive overhauling. But, instead of replacing wheels, cylinders, frames and other parts with new ones of the same kind or design, these 20 locomotives are a still greater improvement on the four previously rebuilt. They are being changed from the 2-8-2 (Mikado) to the 4-8-2 (Mountain) type.

In addition to the four-wheel leading, or pony, truck, other radical changes include a firebox combustion chamber to provide additional heating surface, which necessitated

Photo by Hollem, Office of War Information

No. 5555: a Baltimore & Ohio "war baby."

Fully 20 per cent more efficient since it went through the rebuilding shops, this erstwhile 2-8-2, now 4-8-2, pulls longer trains at higher speeds to beat the Axis. Here the Class T-3 Mountain is shown at Halethorp, Md., 5.4 miles west of Baltimore on the old main line to Point of Rocks.

lengthening the boiler shell; front bed section with cylinders, front part of frame, bumper deck and air pump brackets cast in one piece to eliminate cylinder, frame, and brace bolts; Baker valve gear; oil lubrication on all driving journals; lateral cushioning device at rear drivers; stoker; power reverse gear; mechanical lubricator; two cross-compound air compressors; superheater with rolled-in units, etc.

An open-type feedwater heater is located in the smoke box, with cold-water pump under the cab and hot-water pump on the left side of the boiler near the front.

They have large-capacity tenders with auxiliary water tanks which, combined, carry 26 tons of coal and 27,500 gallons of water.

Half of these locomotives will have a complete engine bed cast in one piece, including cylinders, frames, and all frame cross-braces and cradle frame.

The rebuilt engines compare with the originals as follows:

	Original	Rebuilt
Class	Q-1aa	T-3
Type	2-8-2	4-8-2
Cylinders	26" x 32"	27" x 32"
Steam pressure, lbs.	190	230
Diameter of drivers	64"	70"
Weight on drivers, lbs.	223,600	255,000
Tractive power, lbs.	54,600	65,100
Cylinder horsepower	2128	2990
Pounds of coal consumed per 1000 ton-miles	78.4	65.7

All things considered, the modernized locomotive is fully 20 per cent more efficient.

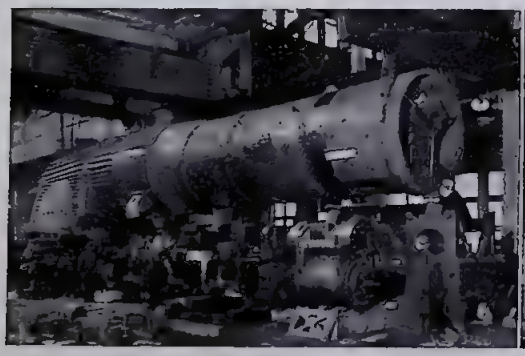
Had the Q-1aa locomotive been given a

1. Class Q-1aa Mike before rebuilding.

2. The old boiler is cleaned and repaired.

3. A section is added to lengthen boiler.

4. Frame and cylinders are made like new.



5. The renewed boiler is placed in position.

6. Miscellaneous parts are put in place.

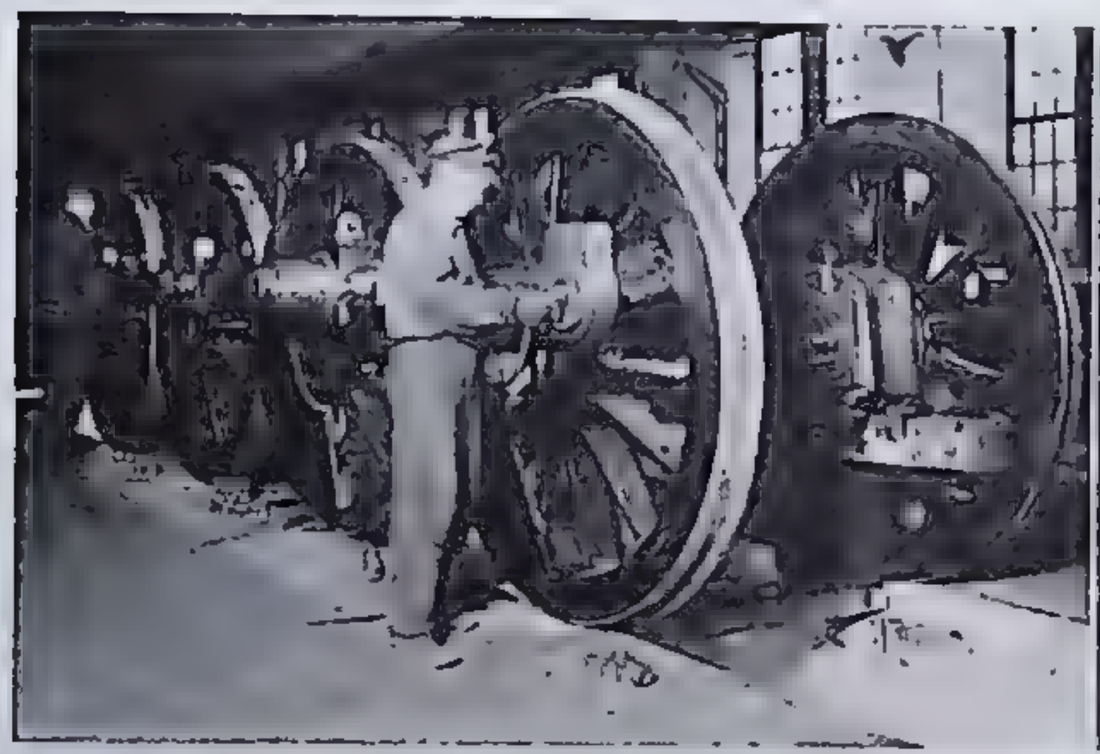
complete overhauling, including a new fire box, it would have cost approximately $15,000. The cost of the T-3, as converted from the Q-1aa, is about $64,000. If a new locomotive of the same type were purchased, it would cost considerably more than $150,000.

When the W. P. B. canceled 14 of the 23 Diesel locomotives the B&O had on order in 1942, the mechanical department, making the best of a bad situation, in part met the need for more power by creating these 20 powerful steam locomotives with a minimum use of much-needed steel. Four of them are already in service and they are coming "off the line" at Mount Clare Shop at the rate of one a month.

As fast as they leave the shop, these mammoth "war babies" are going into service on the "lifeline of the nation," to do their bit to beat the Axis. And in railroad shops all over the nation, similar rebuilding programs are in progress as railroad management buckles down to the task of doing the mostest, fastest, with the leastest.

7. Yokes and valve-gear frame are added.

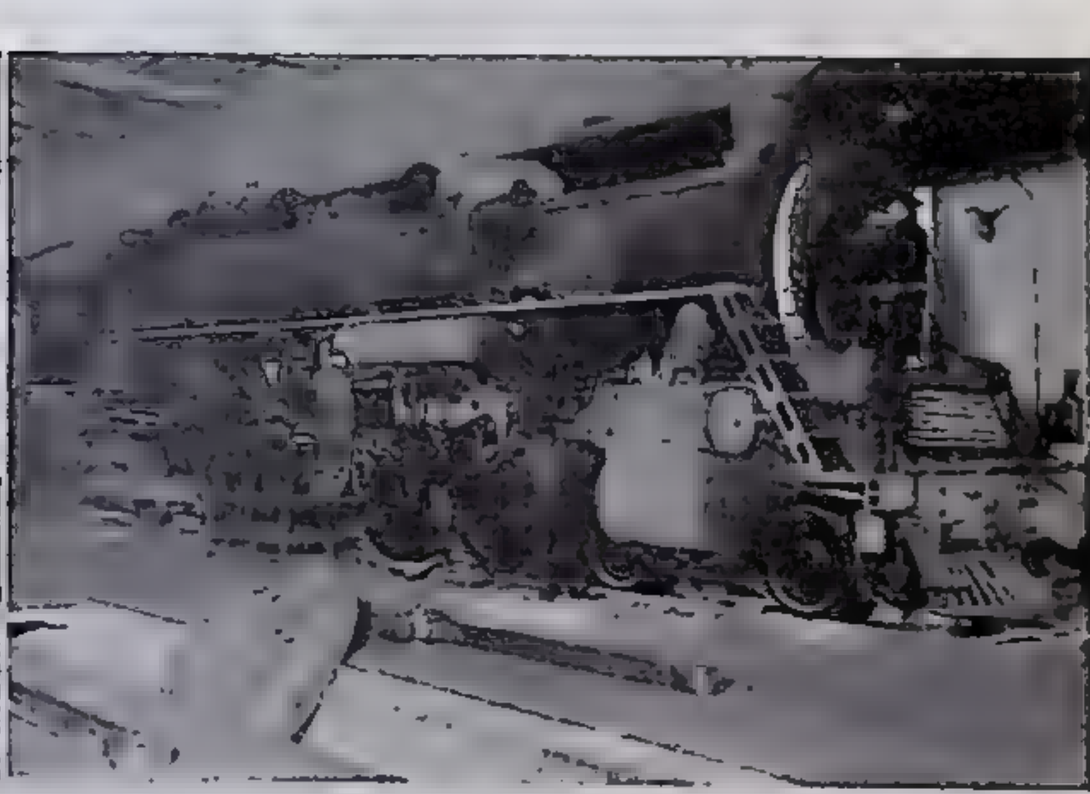
8. Lagging is applied to the boiler.



9. Drive wheels and rods are assembled.

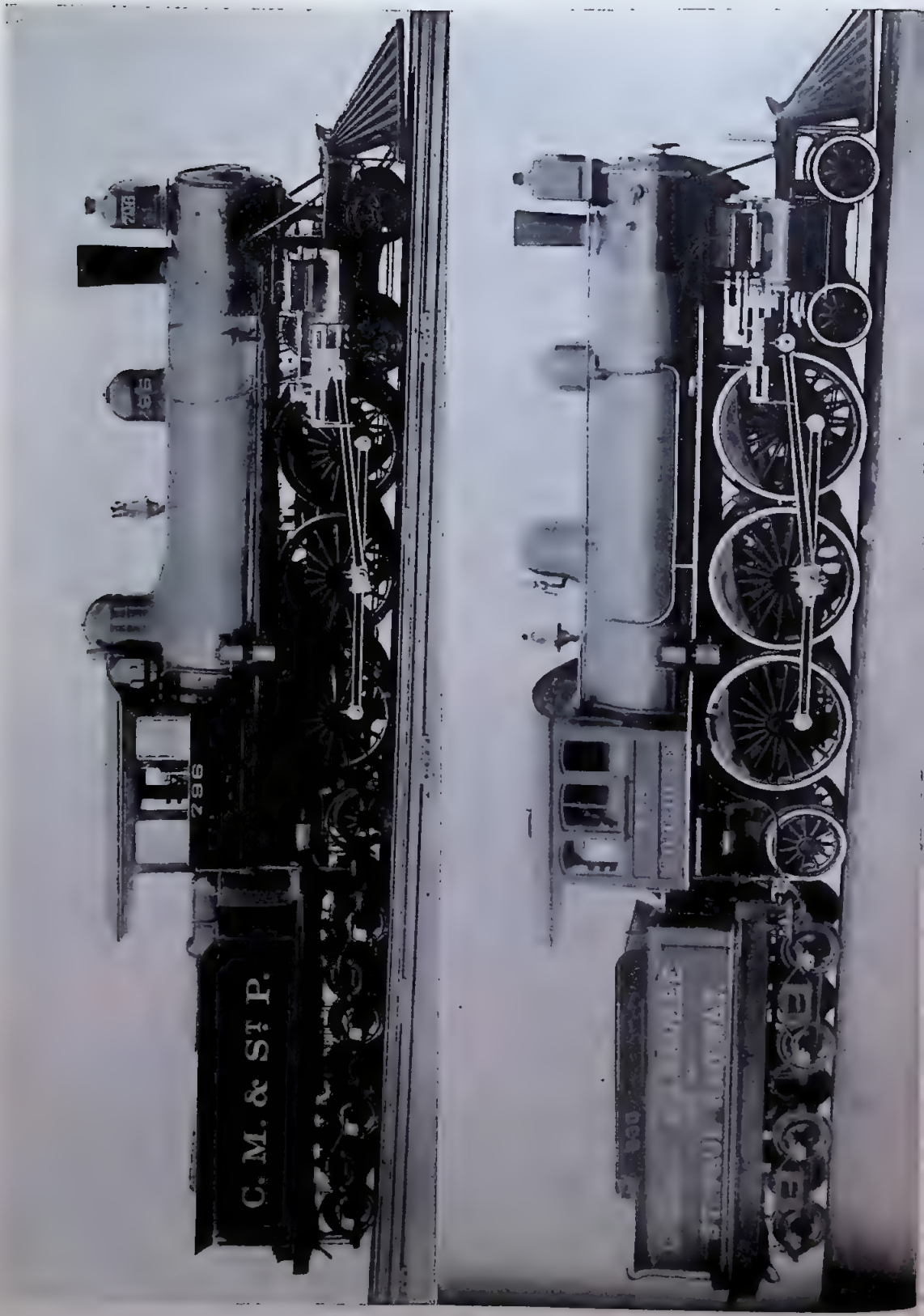
10. The superstructure is lowered in place.

11. Pony and trailing trucks come next.



12. Finishing touches. Below, the "new" engine.

All photos on these pages courtesy Baltimore & Ohio.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796

First "Pacific"?

★ Photos and data from the late Arthur Curran.*

ALTHOUGH the first Pacific-type locomotive was not built until 1901, according to railway historians, two engines of 4-6-2 wheel arrangement were in use before then.

The first of these, Chicago, Milwaukee & St. Paul No. 796 (top, opposite) was originally a 4-6-0, built by Schenectady in 1889, with 19″ x 24″ cylinders, 69″ drivers and weight of 131,000 pounds. Although not very heavy according to present standards, the 796 was too much for the road at that time. Hence, a pair of carrying wheels, placed back of the rear drivers, effected a distribution of weight satisfactory to the road. This engine ran for many years without arousing any special comment.

In 1893 Rhode Island tried this idea and exhibited the result at the Chicago Columbian Exposition. In the main, the design was practical, the chief objection being to the cross-compound cylinders. The photo (lower, opposite) shows the engine numbered 830 and lettered for the CM&StP. Cylinders were 21″ and 31″ by 26″, drivers were 78″ in diameter and the locomotive weighed 150,000 pounds. Steam pressure was the excellent figure of 200 pounds. Tender capacity was 4000 gallons of water and five tons of coal.

This engine was not liked by the St. Paul Road and was sold to the Plant System (now the Florida East Coast). What became of it after that is not known.

* Mr. Curran died recently.

NYC&HR 4-4-0 New York Central & Hudson River No. 623 (once New York & Harlem 23) had an awning for the comfort of the engineer. Completed by the Schenectady Locomotive Works in January, 1880, she had 17″ x 24″ cylinders, 64″ drivers, and weighed 79,800 pounds. In this picture the engine was in work-train service.

Collection of Arthur Curran, 16 Ballard St., Newton Center, Mass.

Letters

★ Interesting sidelights on railroads as readers observe them.

Underdog Railroads.

In times like these the railroad traveler, if he must travel at all, can do both himself and his country a favor by deviating from the beaten track and using those railroads which normally get the smaller share of the business.

The average traveler, for instance, will almost invariably take the New York Central or Michigan Central between Chicago and Buffalo and points between. Seldom does he even think of the Nickle Plate. Of course the NKP doesn't run as many trains, but it does run comfortable equipment, and the last time I rode it, no so long ago, its day train was not crowded.

The Erie between Chicago, Cleveland, or Buffalo and New York is another less known and less used route, but with some of the finest scenery, in my opinion; and while the running time is longer than the standard routes, the meals are good and the cars and roadbed easy riding. The Lehigh Valley between Buffalo and New York offers one of the finest dinners I've had, while the Lackawanna and the Lehigh are both positive wows for scenery.

These are just a few suggestions. To the experienced rail traveler many another will occur. The point is that the thousands of new travelers are taking mostly the standard, much used, routes, and that now is the best time for the man who knows his railroads to explore and use the "underdog" roads, those which often have plenty to offer, but

Relay, Md., on the Baltimore & Ohio.

This is how the junction at Relay, Md., looked several years before the handsome Relay Station was built. Looking almost due west, the tracks to the right are the original Baltimore & Ohio "old main line" from Baltimore to Ellicott's Mills. To the left are the tracks of the Washington Branch. The monument was erected by John McCartney, Ohio contractor who built, on a curve, the famous eight-arch viaduct named for the first president of the B&O, Philip E. Thomas. The blind siding on the old main line is believed to have been used for construction of the Washington Branch tracks over the viaduct, then covered with the huge pile of dirt after it was no longer used.

Courtesy Baltimore & Ohio.

A wide variety of products essential to the construction and armament of airplanes, tanks, ships and other implements of modern warfare, will be manufactured from the contents of these box cars, en route from Butte to the copper and zinc mills at Great Falls, Montana. The heavily loaded train is seen crossing a mountain summit north of Butte.

A Bomber is Born

A good idea of the *symphony of industry* that goes into the making of an airplane comes from a high official of the War Production Board.

More than 1,500 concerns, he says, take part in the production of a single airplane.

It begins, of course, with raw materials, drawn from many parts of the Nation. Finished materials and parts take form in hundreds of plants in widely scattered cities. These flow in endless procession to the assembly plant. And in a surprisingly short time a completed bomber rolls onto the flying field—ready to join the fight for freedom.

An important part of this symphony of production begins in the Northwest. It is reflected in the tasks assigned to the railroads.

The Great Northern hauls iron ore from northern Minnesota to the boats on Lake Superior, lumber and important lumber products, such as plywood, from western forests and mills, copper and zinc from the mines at Butte, aluminum from the recently completed plants in the Pacific Northwest, and other products that have their roles in the making of an airplane. Plants for the production of magnesium, another vital commodity, are nearing completion in the Pacific Northwest.

The Great Northern participates also in the assembling of the finished materials and parts, transporting them in an uninterrupted flow for airplane manufacturers in other parts of the country, as well as to the Northwest's famous airplane plant which is filling world-wide skies with Flying Fortresses.

Thus from forests, fields, and mines—from gondolas, box cars and flat cars—from more than 1,500 widely scattered manufacturing establishments—from inventive and organizational genius—and from labor—*a bomber is born.*

GREAT NORTHERN RAILWAY

New railroad book.

RAILROADING FROM THE HEAD END, by S. Kip Farrington Jr. 296 pages, 6" x 9", $3.50. Doubleday, Doran & Co., Garden City, N. Y.

Boys of today may want to ride bombers, but the men of today can, almost without exception, remember when life's fondest ambition was to ride the cab of a locomotive. All the excitement and romance of railroading seems to crowd, somehow, into the locomotive cab. And Kip Farrington, saltwater editor of *Field and Stream* and author of many an article in national magazines, has often sampled that excitement and romance. His new book attempts to view all railroading from the vantage point of the head end.

Where the author takes his readers on specific cab rides, with nerve-tingling and exacting detail, the job is exceptionally well done. The personal impressions of a newcomer in the engine cab are so well portrayed that the reader is carried along with enthusiasm. But when the author changes the subject to spend an occasional chapter on railroad history or railroad organization the going is bumpier. The photographic illustrations are excellent, and all in all this is a book worth having.

from the force of traveling habit haven't had the volume of business which makes frequent and fast service possible.

R. Edwin Boothe.

Ottumwa, Ia.

Round Trip to Reno.

I am able vaguely to recall a railroad junket of three or four years ago which parallels, although doesn't quite tie, Mr. Geiger's in your April letters column. You will understand the "vaguely" when I explain that it was a film hoorah staged by Warner's for the opening of their film *Virginia City*. We rode regally to Reno as a special section of the *Forty-niner* and some of us never did leave our cars until we were delivered back to New York. Others got onto the West Coast special and came to in Los Angeles, mostly to their surprise and without any luggage.

It was a stirring skirmish with two diners and two bar cars running on a 24-hour basis. In addition to the actors and reporters, who had some slight concern with the fracas, there were any number of personable ringers present, some of them like Bruce Cabot from rival film shops and like Jack Kriendler, who had a carload of his own horses attached to the West Coast section in case anyone was able to mount them. There were hardly any arrests, although Chief of Police Andy Williver of Reno had sworn in a large posse of deputies to keep order among the high-salaried celebrities present. It was all beautifully handled by the Central, North Western, Union Pacific, and Espee, and quite a trick it was too, as I don't think the house track at Reno is long enough to accommodate more than 20 cars. This was all right with some of the junketers, as their cars were parked down at Sparks, which is a notoriously low community after dark.

Lucius Beebe.

Herald-Tribune, New York City.

More About New York.

In "Letters" of the March issue mention is made of the fact that the Lackawanna, Central of New Jersey, etc., have freight stations in New York City but no motive power nor tracks. This is not the case, as the Central of New Jersey, Lackawanna, and Lehigh Valley have a freight station in the Bronx with Diesel-electric power. In addition, the Lackawanna has a freight station in Brooklyn with motive power operated by electricity from trolley.

Both the Erie and the Pennsylvania have freight stations in New York, not far from the B&O's yard, in which they have extensive trackage with their own motive power.

John B. Reschke.

690 Eighth Ave., New York, N. Y.

Your *Trains* may be late.

Although Trains is now leaving its publication office on schedule, mail delays may make your copy late. This is to be expected in time of war.

"RIGHT OF WAY FOR THE U. S. A."

WORLD'S GREATEST ASSEMBLY LINE

America is fortunate that, with only 6% of the world's population, it has 37% of the world's total railroad track mileage.

And it is doubly fortunate that, during twenty lean years, the American railroads spent eleven billion dollars of their own money to lay heavier rails, reenforce bridges, improve terminals and build up a transportation system which is the world's greatest assembly line.

For the railroads today are moving more freight than any transportation system in the world has ever handled before.

They provide an assembly line 236,000 miles long—which picks up coal and ore from the mine, food and fibre from the farm, wood from the forest.

They shuttle back and forth, carrying all these raw stuffs through countless stages of processing, parts-making and assembly, until finished war goods are delivered to the millions of men in our camps, and to ships waiting to carry the precious weapons of victory to armies around the world.

A million and a third tons move a mile every minute on this assembly line, and more than a million loyal and hard-working railroad men keep 'em rolling.

• • •

HELP MAKE TRANSPORTATION GO ROUND—
Passenger traffic has doubled in the last year. And the railroads want to carry everyone who must travel. So won't you do this to help? **1.** Plan early—make reservations and buy tickets as soon as you can. **2.** Avoid week ends—midweek travel is less crowded, more comfortable. **3.** Travel light—don't carry more baggage than you really need. **4.** Cancel promptly—when your plans shift, release your reservations quickly. Someone else needs them.

Thank You.

UNITED FOR VICTORY

Association of
AMERICAN RAILROADS
Washington D. C.

The Month

★ Supreme Court upholds I.C.C. in railroad reorganizations.

★ In the most important financial case in recent years the United States Supreme Court concurred with previous Interstate Commerce Commission findings concerning reorganization plans of the Western Pacific and the Chicago, Milwaukee, St. Paul & Pacific railroads. The I. C. C. plans were outlined in 1939 for the WP and in 1940 for the Milwaukee Road. Stumbling blocks in the procedures were litigations concerning the legality of the I. C. C. ruling that both common and preferred stock of the old companies would have no value in the new companies and stockholders would thus have no equity in the reorganized companies. Further pressure by the stockholders was brought to bear when the railroads' revenues took a spurt upward due to the war-boom traffic. The Supreme Court ruled against the stockholders' claims, as had the I. C. C., and as a result the properties will be reorganized and recapitalized on a very conservative basis with the control left in the hands of the present bondholders. Several other important questions concerning railroad reorganization were passed on for the first time by the Supreme Court in the WP case, and the effect of these decisions will undoubtedly be that the reorganization of the 30 railroads in receivership will be carried out along lines similar to those included in the reorganization structures of the WP and the Milwaukee Road. The Supreme Court ruling, making it legal to toss out past stockholders *sans* equity in the new organizational structure, will definitely discourage future investment in railroad capital as opposed to bonds. This trend can have far-reaching effects should the rate structure be revised downward and increased fixed charges result through bank investment for new equipment.

★ Efficiency of the Russian railroad system can be accurately gauged when it is considered that the U. S. S. R. stretches over one-sixth of the world's surface, yet contains only 60,000 miles of railway line. Compare this with the United States, one-fourth the size of Russia and with 229,000 miles of railway. In the task of moving vast amounts of men and material under the handicap of aerial and land attack, the Russians have performed a miracle of transportation, probably equaling records established in the U. S. A. Russian industry, prior to invasion, was concentrated in western Russia, and the majority of its railway system was naturally confined to this densely populated area. However, as the German armies advanced they cut down the Russian railway system by one-third, and an increasingly heavy load was thrown on the remainder. This being a war of transportation, one can readily understand why the Russian railways played so important a role, perhaps the lead role, in the defeat of the German armies.

★ Many railroad difficulties with competition can be laid to the rate structure. For instance, with the exception of very short hauls and less-than-carload traffic, the railroads can transport almost anything at a lower net ton-mile cost than trucks. Railroads carry goods at an average ton-mile rate of slightly under one cent, while trucks carry goods at an average ton-mile rate of slightly under four cents. But the railroads, unlike the trucks, are a true common-carrier and transport anything which is offered to them. They move huge quantities of coal, sand and gravel, lumber and other bulk commodities of low value on which the transportation rate must be very low to be in proportion with the actual cost of the goods themselves. Hence the railroad rate structure is very delicately balanced with rates of less than average for the low-cost bulk commodities and rates very much above the average for high-value commodities such as fruits, dairy goods, manufactured goods and so on. That's why the trucks have had success in taking business away from the railroads. There has been much talk about revamping the railroad rate structure to meet this competitive difficulty, but little has been done because the job is so vast. One changed rate can affect the rate on almost every other commodity. The progressive Boston & Maine - Maine Central did, however, remake its l. c. l. rates to better compete with the truck lines. The experiment worked so successfully that after three years of the new rate, the truckers have induced the Interstate Commerce Commission to cancel the rate. From a purely technical and economic position, the railroads can do a real low-cost transportation job, but they seem to be up against plenty when it comes to reflecting their operating advantages in their rate schedules.

★ Teheran, the Iranian capital city, is the scene today for a bit of unusual railroad activity. An American-built train operated by an American crew of soldier railroaders is carrying war materials for Soviet Russia. The train is operated between a Persian Gulf port and the capital. This news, the first authenticated report concerning American railroad crew and equipment activity in Persia, is from an Associated Press dispatch.

★ The Milwaukee Road has been authorized to abandon a 12-mile branch line between Goshen Junction and Kulshan, Wash. O. D. T. representatives and lumber men in the territory protested the application for abandonment because they doubted trucks could continue operation due to wartime conditions. Division 4 of the I. C. C., in granting permission to abandon, stated: "We do not believe it fair to the applicants to force them to continue operation of an unprofitable line to insure the future transportation of timber from the territory when there is no suggestion that the shippers are willing to begin now the use of the branch in order to permit its operation without loss, even though they thereby would conserve their present truck equipment."

The railroads are helping to win the war by doing the impossible on the strategic transportation front. They are moving 75 times as much oil to the East as in peace, three times as much freight, more passengers than ever before, as many as 71 trains a day on two-way single track, and all without car shortage or delay. No wonder the railroads don't welcome company now!

Do your railroading the armchair way!

WHILE the railroads are too busy for fan trips or informal roundhouse visitations, try books . . . the easy way to armchair travel and the quick way to familiarity with all the railroads of the 48 states. Try the four TRAINS albums, for instance—*Eastern Railroads, Far Western Railroads, Midwestern Railroads* and *Colorado Railroads*—each a monumental collection of excellent photographs, well reproduced, with stirring foreword and captions. Try the new *This Fascinating Railroad Business,* by Robert S. Henry, probably the most readable book about the inside workings of the railroads.

Home and fireside can hardly substitute for smoke and steam and the smell of hot cylinder oil, but when a fellow hasn't much choice the right books can offer a wide background of locomotive lore that sort of takes the edge off wartime restrictions. So how about Edward Hungerford's celebrated *Locomotives on Parade,* with its hundreds of intimate tales about the great and less-great locomotives of past and present? Or Ed Alexander's *Iron Horses,* with its 96 lithos of nineteenth century locomotives, representative of the story of locomotive development?

Use the coupon to order now!

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Four books, each consisting of 22 large (14" x 10") sheets of excellently reproduced photos, some new, some reprinted from TRAINS. Printed with high-gloss ink on high-gloss paper. Special binding makes it easy to remove any sheet for framing if desired. Book 1, Eastern Railroads; Book 2, Far Western Railroads; Book 3, Midwestern Railroads; Book 4, Colorado Railroads. Each book, postpaid ____ **$1.00**

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"Bonanza Railroads" preserves the exciting and colorful stories of five pioneer railroads that have had days of glory and drama but have faded into the past. The tales of the main lines are too often told. These are the stories of five Western short lines—intriguingly different. 150 pages, illustrated. Postpaid ____ **$3.00**

This Fascinating Railroad Business
By Robert Selph Henry. A fascinating, authoritative narrative of the American railroads at work, the story of what they do and how. 500 5½" x 8½" pages, postpaid ____ **$3.50**

Iron Horses
By E. P. Alexander. A collection of 96 lithographs representative of the history of 19th century locomotives, with appropriate descriptive text. 239 8½" x 11" pages, postpaid ____ **$5.00**

Locomotives on Parade
This is the book for the man who likes locomotive lore. No one but Edward Hungerford, who has fraternized with locomotives and their people all his life, could tell as many or as interesting intimate stories about the engines of our railroads. 230 6½" x 9" pages, postpaid ____ **$2.50**

TRAINS, Book Dept., Milwaukee, Wis.
Enclosed is $____ Please send:
☐ Albums: ☐ Eastern ☐ Far Western ☐ Midwestern ☐ Colorado
☐ Pennsylvania Map ☐ Locomotives on Parade
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☐ This Fascinating Railroad Business

A Northern Pacific pool train from Seattle, on the home stretch for Portland, passes a switcher with a cut of passenger cars. Many industries are located along the railroad and the nearby Willamette River on these flat bottomlands northwest of the city.—*W. F. Postles, 2223 N.E. 43rd Ave., Portland, Ore.*